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LOYALTY.

Loyalty is the greatest word in the English language. To be successful, you must be loyal. When a man is kicking and knocking, he is not loyal. A mule never kicks when he is pulling.—Charles Sharp.

Co-operation in Toll Operating.

In every line of human endeavor there stands out prominently one factor which makes the thing a success, and the lack of which causes failure. That factor is co-operation. Co-operation is "working together to gain a certain result." It is a harmonious joining of effort to produce a result which is satisfactory to all parties interested in it.

In the operation of long distance telephone lines "Co-operation" is a most important factor. Upon it rests the success or failure of the company. Regardless of the facilities of a company, the long distance service cannot be successfully built up unless the operators intrusted with the care of the business co-operate with each other in properly operating the lines according to the best methods.

It is not a difficult thing to harmoniously co-operate with each other when engaged in operating long distance lines. In fact it should be much easier than working at cross purposes. All one has to do is to realize that the operator, who is trying to put a call through, is doing her duty and trying her best to do it in accordance with the rules and methods adopted and laid down by the company; and to remember that the operator who is receiving the call, is trying her best to do the same thing.

One sometimes gets an idea that the operator at the other end of the line is not aiding and doing all she can towards establishing the call. The chances are that she is doing her very best. The circumstances at her end, however, may be such that she is unable to give the proper attention to the particular call in question. In such a case, the calling operator should ascertain from the called party, or vice versa, the reason for her apparent neglect; and the called operator, or vice versa, should freely and cheerfully give the reason, if any.

An operator, failing to give proper attention to a call, or to the calling or called operator, is not doing her duty to herself or to her company. She is not co-operating.

Operators on long distance lines do not as a rule see and know each other. They are acquainted only by talking over the line. The voice is ofttimes deceptive and the tone used by one operator to another sometimes gives a false impression.

An operator using a distasteful, harsh or sharp tone is set down as, and is considered, a disagreeable person. In reality, she is not, but she is unfortunate enough to have created this impression by using the wrong tone in speaking to her distant associates. Operators should be very careful to be courteous, and to speak in an unmistakably kindly tone to their associates—especially to those whom they cannot see and cannot know, except by talking over the wire. Operators who do not do this are doing themselves an injustice. They are unfair to their associates and are not co-operating with one another.

No operator should inconvenience another operator because of some fancied previous inattention—the charge may be unfounded. The "getting even" spirit has no place in business affairs; among operators, it works a severe injustice to the telephone company.

The common ground upon which long distance operators meet is represented by the rules, regulations and methods of operating which are printed in the routing book. These rules are based upon co-operation. Every operator should aid and help the others, in every possible way, to observe the operating rules in every detail. By helping and aiding the others to get the calls through promptly, one helps herself and the company. "One good turn deserves another," and were it possible for each long distance operator to meet, personally, and see the others, there is not the

slightest doubt that there would be "no fighting for the line," no unkind words, no misunderstanding of rules. Instead, there would be a real co-operation which could result in nothing but a splendid increase in, and a rapid growth of the long distance business. A lost call is a lost sale. A sale should not be lost when it can possibly be avoided.

The operating schools, which have been held in many states the last year, are producing, doing a great deal towards bringing about better co-operation between toll operators. The value of these schools are rapidly being recognized by the telephone companies as the increasing frequency of the meetings evidences. This is one of the definite manifestations of the spirit of co-operation which is being awakened among Independent telephone men.

You're a Half-Way Man

By HERBERT KAUFMAN

There is always a way out—a labyrinth was not designed to have men lose their way, but to find the exit. Had Alexander been less spectacular and more persevering, the qualities that made him a world-master would have found a method of untying the Gordon knot.

There's no line so tangled but what some cunning fingered fisherman will straighten the kinks. Puzzles are designed solely for solution—to test tenacity, to excite ingenuity, to spur will and to challenge wit.

The human race has climbed steadily to intelligence and power only because each generation of men has been faced with seemingly insuperable obstacles. Necessity has forced us to go a little farther, to climb a little higher than our forbears.

No mystery can persist against the constant attempts of genius to inquisitive minds. But brains are only as effective as the resolution behind them. It takes a hard head to cope with a hard problem.

Civilization has been chiefly served by two widely different types. The notable achievements of all times have usually been thought out by brilliant brains and relinquished half-completed, to be fought out by a less imaginative but more tenacious breed.

Most of us know what to do—the processes of success are self-evident. Few great lives have been lived behind the curtain. Any man with a grain of curiosity can discover with little effort what, how, and when the extraordinary few of any period struck the path which led to the unusual goal.

There has been little of the spectacular, nothing of the wizardry in these careers, and most of their biographies may be epitomized in this short phrase: "He was not a half-way man."

The spot where you stand—the trade or profession in which you are engaged—are only of comparative importance. Day by day we behold the newcomer prospering where his predecessor was unable to eke out an existence.

The trouble with you—the trouble with most disgruntled complaining hit and miss men—lies in lack of coherent application. Your history is a common one. Your life is a series of half-solved puzzles. You are industrious, but industry without concentration is aimless labor. You plod and plug year after year, but there is no direction to your efforts.

You are just a "half-way man", searching for the eternal impossible—a road to success without a soul-trying, brain-teasing barrier in its course.

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Testing of Loading Coils and Cases Before Installation

The Various Tests Made on Loading Coils During Manufacture and Assembly—Methods of Connecting Windings of Coils and Results Obtained—The Equipment Used for Testing—The Cross Talk in Testing Circuits and Means for Reducing It

By W. N. Furthmann

Loading coils are tested during their manufacture, and after their complete assembly, for permeability of the iron wire used in the core; for the direct current resistance of the line windings of the coil and the unit of loading of which it forms a part; for the effective resistance of the line windings of the coil and of the unit of loading; for the alternating current breakdown test of the line windings and between the windings of the coil and the case with the cable stub attached; for the insulation resistance of the completed coil and the case with cable stub attached; for the complete amount of cross talk in the coil and case with the cable stub attached and also for the unit of loading of which it forms a part. All of these tests are applied, except the breakdown and insulation resistance tests, during the process of assembly, and all are repeated three times after the coils are assembled. The same tests are applied to the aerial and cable coils and cases.

The testing of loading coils before they are shipped is of importance, because it eliminates a very large amount of field testing. In the field it is very difficult, if not almost impossible, to obtain current of the high frequency which is necessary, especially when testing for effective resistance, inductance and cross talk.

In order that a clear idea may be obtained of the various connections of a loading coil during the tests, it will be necessary to show by illustration not only the method of connecting the windings, but also the direction of the flow of the current in the windings and the electrical results thus obtained.

A non-phantom type of coil has in general two windings on a common, ring-shaped iron core, designated in the sketches as the *a* and *b* windings. In the recently developed coils the windings are placed upon one another, and not adjacent, as shown schematically in Fig. 1. The windings may be connected in four different ways: Series aiding, parallel aiding, series opposing and parallel opposing.

The end of the *a* winding may be connected to the beginning of the *b* winding, so that the same amount of current passes through both windings in series and the iron core is equally magnetized by the currents in both windings. In this case, Fig. 1-*A*, the windings are connected in "series aiding."

The beginning of the *a* winding, Fig. 1-*B*, may be connected to the beginning of the *b* winding, and the end of

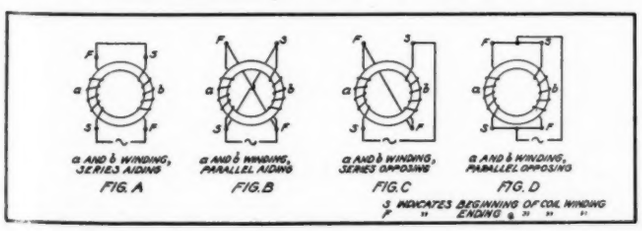

a AND b WINDING, SERIES AIDING
FIG. A
a AND b WINDING, PARALLEL AIDING
FIG. B
a AND b WINDING, SERIES OPPOSING
FIG. C
a AND b WINDING, PARALLEL OPPOSING
FIG. D
S INDICATES BEGINNING OF COIL WINDING
F " " "
ENDING " " "

Fig. 1. **Connection Possibilities of Non-Phantom Type Coil.**

the *a* winding to the end of the *b* winding. Instead of being connected in series, the windings are connected in "parallel aiding." The number of effective turns is, therefore, reduced to half that in Fig. 1-*A*. Since the inductance is proportional to the square of the number of turns, the inductance in Fig. 1-*B* will be only one-fourth of that obtained in Fig. 1-*A*. The ohmic resistance, as well as the energy losses in the iron, will be reduced to one-fourth; that is, the alternating-current-loss resistance and consequently the effective resistance, which is obtained from the sum of the ohmic resistance and the resistance due to

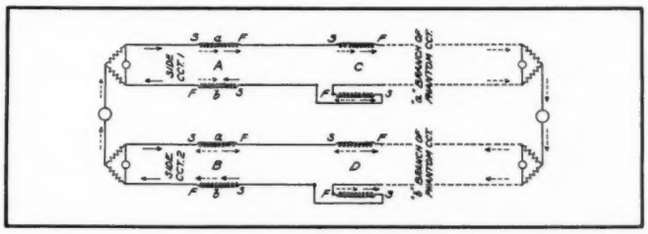


Fig. 2. **Pupinizing of a Phantom Circuit.**

energy losses, will be reduced to one-fourth the value of that of Fig. 1-*A*.

The end of the *a* winding may be connected to the end of the *b* winding, Fig. 1-*C*, so that the current will pass through the *a* winding in series from beginning to end, and, reversely, through the *b* winding from end to beginning. Assuming that the two windings are exactly equal and are superposed with respect to each other, the magnetizing action of the currents in both windings will be neutralized. The coil will show no inductance, and will have no alternating-current-loss resistance. In this method of connection the coil has only ohmic resistance. The windings are connected in "series opposing." In this case the current in the *b* winding is reversed from that in Fig. 1-*A*.

The beginning of the *a* winding may be connected to the end of the *b* winding, and the end of the *a* winding to the beginning of the *b* winding, Fig. 1-*D*, and the current thus passed through the *a* winding from beginning to end and through the *b* winding from end to beginning, as in Fig. 1-*C*. In this case also the magnetizing action of the two windings will be neutralized. However, instead of being connected in series, they are connected in "parallel opposing." The ohmic resistance will be one-fourth of the resistance of Fig. 1-*C*.

All of these methods of connection are found in practice when a phantom circuit is to be Pupinized, as indicated in Fig. 2. The solid arrows indicate the currents in the component circuits, while the dotted arrows indicate the current in the phantom circuit. It will be readily understood that in the coils *a* and *b* the windings for the component circuits 1 and 2 are connected in series aiding, according to the method of Fig. 1-*A*. For the phantom circuit the two windings of the coils *a* and *b* are connected in parallel opposing, according to the method of Fig. 1-*D*. In coil *A*, with the direction of current indicated in the sketch by the dotted arrow of the *b* winding in coil *B*, the direction of the dotted arrow of the *a* winding differs from that of the solid arrow. In coil *C* both windings are connected in parallel aiding in the *a* branch of the phantom circuit (dotted arrows), according to the method of Fig. 1-*B*. For the component circuit 1, the windings are connected in series opposing, according to the method of Fig. 1-*D*. Coil *D*, corresponding to coil *C*, is aiding in the

b-2 branch of the phantom circuit, per the method of Fig. 1-*B*, and opposing in the component circuit 2, per the method of Fig. 1-*C*. Therefore, the coils *A* and *B* introduce inductance in the component circuits, while the coils *C* and *D* serve the same purpose in the phantom circuit.

If the coils contain an equal number of turns, the inductance in the phantom circuit will be equal to one-half of the inductance introduced in the component circuits. If, for instance, the inductance of the coils *A* and *B* is 0.2 henry, with the windings connected in series, the inductance of each of the coils *C* and *D*, with parallel connection will be 0.2÷4=0.05. The two coils are now connected in series in the phantom circuit, so that the total induction introduced by them in the duplex line is 0.1 henry.

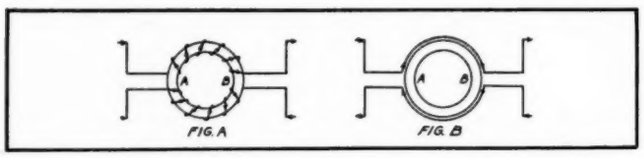


Fig. 3. Pupin Coil with Adjacent Windings.

As previously indicated, if the windings are to completely neutralize each other's magnetic effect in Figs. 1-*C* and 1-*D*—that is, to show neither inductance nor alternating-current-loss resistance—they must be superposed upon each other.

As long as the Pupin circuits are not to be employed for phantom operation, the two windings of a coil to be connected in a side circuit could be wound adjacent to each other on the core, as shown in Fig. 3. The winding, Fig. 3-*B*, shown concentrically around the core, is not intended to represent a different method of winding from that shown in Fig. 3-*A*. It is only intended as an illustration of what should be understood by the concentric drawing of the windings in other illustrations. In Fig. 3-*B* the arrows indicate the direction of magnetization in the iron core. The winding is the same as in Fig. 3-*A*.

It will be noted in Fig. 3 that the current in the side circuit passes through both windings in such a direction as to magnetize the core in the same sense. The path of these lines of magnetic force is entirely within the iron core. If a line equipped with such coils were employed for phantom working, the currents of the phantom line would traverse the *a* and *b* windings in parallel, for example, while the direction of current in the *a* winding would be the same as that in the duplex line, the direction of current in the *b* winding would be reversed. The currents of the phantom circuit would magnetize the iron core in such a manner that poles would be produced at *A* and *B*. The lines of magnetic force would leave the core and complete their path outside of the core.

If several coils of this type were placed adjacent they would be subject to disturbance due to mutual inductance. If an effort were made to prevent this by surrounding the individual coils with metal shells, energy losses would be introduced, due to eddy currents and hysteresis, which would appear as an increase in the effective resistance of the coils. The coils must, therefore, be wound in such a manner that no poles will be produced. Offhand it might seem that the simplest way of attaining this result would be to apply a bifilar winding to the core of the coil, and to use one of the bifilarly wound wires for the *a* winding and the other for the *b* winding. While from the magnetic standpoint the desired result would be obtained by this procedure, at the same time the mutual capacity of the two windings would be considerably increased. The insulation and dielectric strength would also be so affected that it would be difficult to connect such coils, especially into open wire circuits, due to the danger of atmospheric discharges, and obtain satisfactory results.

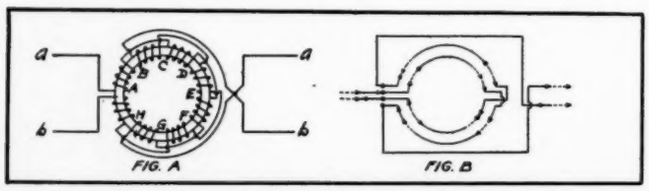


Fig. 4. Coil Without Divided Windings—Coil Inductive to Side.

A second means would be the further subdivision of the windings according to that shown in Fig. 4-*A*. By this means an improvement would be obtained over the ordinary coil, but the disadvantages would not, by any means, be completely eliminated since poles would exist at *A, B, C, D, E, F, G* and *H*.

The effective avoidance of the disadvantages mentioned can only be obtained by superposing the windings with respect to each other. This may, of course, be accomplished in different ways, and with different subdivisions. A practical method is the division of the coil into two halves, in which the *a* winding on one-half of the core is placed at the inside, and the other half on the outside, and the *b* winding is arranged in a corresponding manner. In this way the fields will be neutralized quite completely.

The windings of such a coil are shown in Fig. 4-*B* in a connection which is aiding for the side circuit and opposing for the phantom circuit. The solid arrows indicate the current in the component circuit, while the dotted arrows show the current in the phantom circuit. It will be noted that the currents in the side circuit magnetize the iron core in the same sense.

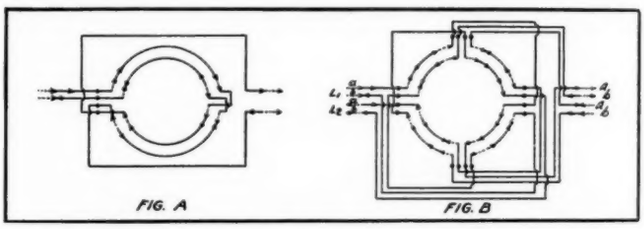


Fig. 5. Coil Inductive to Phantom Circuit—Phantom Coil.

In Fig. 5-*A* are shown the windings of such a coil in a connection which is aiding for the phantom circuit and opposing for the side circuit, as will be readily noted from the arrows.

Instead of inserting two double coils in each branch of the phantom circuit in order to increase the inductance, as shown in Fig. 2, the four windings of the coils, *C* and *D*, may be placed on a single core, as shown in Fig. 5-*B*. It will be noted from the arrows that the currents in the phantom circuit aid each other in their magnetic action, while the currents in each side circuit neutralize each other's magnetic action.

In another article it was pointed out that iron wire of only one permeability is necessary, even in the manufacture of a large number of coils of great and small inductance. It has also been determined that the limits which the supplier demands are so broad as to bring wire of two annealing points on one spool or one spool of a high annealing point and another spool of low one. The safest course is to anneal each spool at the temperature the completed coil is to be subjected to, and to waive any laboratory test for permeability.

The windings of the coils are tested for direct current resistance with a Wheatstone plug, bridge and galvanometer. This test is applied as a process test as a check on the winding operation, and is held to maximum and minimum limits to allow for commercial conditions in man-

ufacture and variation in the copper wire. Care must be taken to use only one dry cell in this test, as two cells would produce more than .1 of an ampere, thus magnetizing the coil. While it is possible to demagnetize a coil by means of a saturating and desaturating process, when 65 permeability iron wire is used, the effect is uncertain. It may require several applications to obtain the desired result. Because the saturation point is known and the test for direct current resistance simple of operation, magnetization results only from carelessness of the operator.

Testing loading coils for effective resistance and inductance is, however, one of the most complicated tests that is made. Fig. 6 illustrates the circuit used in making this test. The electromotive force across the bridge is 45 volts, the current 420, or 800 micro-amperes, and the frequency 1,780 cycles. The effective resistance is the alternating current resistance. It depends upon the direct current resistance of the coil, and its iron core and the frequency at which the coil is tested. All of the testing apparatus is shielded, and the shields are grounded, with the exception of the shield of the ratio arms.

Shielding of the set is essential where high resistances and inductances are grouped closely together in a small bridge circuit. In such cases it is necessary to mount all of the apparatus possible in a shielded box lined with zinc. In a small and compact set, suitable for commercial use, the shields of the various parts will be very close to each other. Therefore, there is considerable danger of mutual capacity between shields in the same relation, as though two lead covered cables were side by side when tested for capacity. On this account it is necessary to install in the set an air condenser for eliminating this mutual capacity between shields. The conductors of the set will also lie in close proximity, and the writer has found bare conductors suspended in air preferable to shielded conductors on this account. Because of the size of the inductometers that are required, it would be impossible to shield them satisfactorily. Great care, however, should be taken to eliminate all metal as exposed parts in their construction. While it has been found advantageous to shield the receiver the writer has noted that a capacity to the operator also exists.

It is also impossible to shield the alternating current generator and its associated apparatus in an ordinary shop testing room. There is also likely to be a changing amount or iron, due to the presence of the coil cases in the testing room. There is, therefore, a slight error in the tests, owing

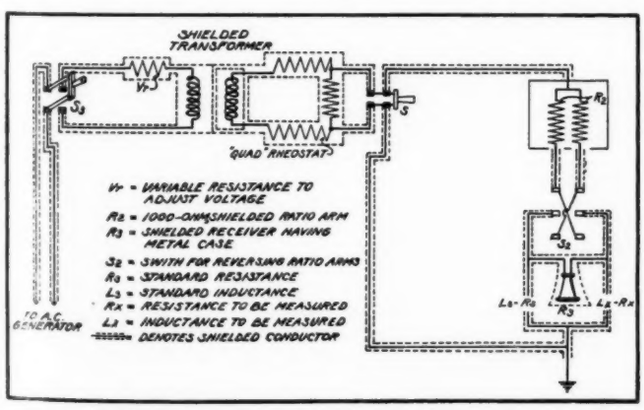


Fig. 6. **Shielded Bridge for Measuring Effective Resistance.**

to conditions that cannot be obtained outside of a perfectly shielded laboratory. All precautions possible should be taken so that the tests for effective resistance and inductance are as accurate as commercial conditions will permit. The time constants of a loading depend upon the effective resistance and inductance of the coil. When it is remembered that the time constant, determined upon to load a given length of line, is to meet a definite transmission condition, the importance of this test will be clear.

All phantom loading coil windings are tested for effective resistance and inductance for the series aiding and series opposing connections, and all side circuit phantom coils for the parallel opposing and series aiding connections.

The effective resistance test determines not only the hysteresis losses of the core, but also its permeability. It also proves whether all the moisture has been entirely removed from the coil. The inductance test determines whether a sufficient amount of copper wire has been used in the line windings, and also whether or not the coil has, for any reason, been magnetized during either the manufacturing or testing operations.

The source of current used when making the alternating current breakdown test, consists of an alternating current machine, having a frequency of 16⅔ cycles, and a step up transformer. Care should be used in this test not to magnetize the coil. In a small, confined space this test is difficult to make, especially when it is applied to a large number of aerial coil cases, each having four to eight terminals. It is not easy to avoid magnetizing the coil, especially when the practice is followed of grouping eight or ten aerial coil cases on a small hand truck located in the testing room, directly in front of the heavily charged power board.

The breakdown test is applied to determine the efficiency of the varnished linen insulation between the windings and between the windings and the core. It is also of importance, when applied to an aerial case, in determining whether the case is properly assembled, both as regards the proper insulation of the leading-out terminals and also of the impregnation of the coil itself, with a sufficient amount of compound. The 1,000-volt alternating current breakdown test applied to a cable coil and its completed case has the same comparative value.

In performing the insulation resistance test, using 500 volts as a source of current, care must be taken to use a shunt that will prevent more than .1 ampere from crossing the coil. Generally the galvanometer is used on other types of apparatus, and failure to change the shunt in changing over to test loading coils is due to carelessness on the part of the operator. When it is remembered that this test is applied after the case has been completely assembled, it will be understood how important it is to have a coil containing a core of iron wire that will readily accept the remedy of a saturation and demagnetization test without the necessity of removing it from the case. This is especially so of a cable loading coil case liable to contain from 20 to 98 coils per case. The cost of dismantling a case of this kind means a large sum of money lost whenever a little shunt is overlooked.

(To be Concluded)

Telephone Business Brings Better Wages with Experience.

In the report of the wage investigation made by the New Orleans, La., chapter of the National Consumers' League during the summer of 1914, to the Louisiana State Commission in order to study the working conditions of women and children, it was shown that the only one of the businesses studied in which experience brings better wages with definite certainty is the telephone business. In that business it was found that every three months of additional experience brings an increase in wages.

New Telephone Exchanges in Japan.

New telephone exchanges are being established by the Japanese post and telegraph departments in the towns of Kitaku, Osaka, Rosokucho, Kanda and Tokio.

Fundamental Principles of the Telephone Business

A Reading Course Designed to Present Logically the Principles Which Underlie Successful Organization and Operation of Telephone Properties —Prepared Under the General Supervision of Stanley R. Edwards—This Section on Economics of Telephony written by James H. Shoemaker

Quiz Questions on the Preceding Installment.

64. Outline what is termed the second cause of legislative regulation.

65. Show the relation of the first two causes of legislative regulation to the third cause.

66. State the real reason for regulation.

67. What are the most important facts and factors to be dealt with by the practical telephone economist?

68. What must a utility leader be permitted to do in order to maintain reasonable service at reasonable rates?

CHAPTER IV. Regulation and Management (Cont'd.)

69. *Elements which Oppose Regulation.*—Some of the forces which opposed legislative regulation in the past were mentioned indirectly when the elements which favored regulation were considered. The short-sightedness of railway managers caused them to oppose the enactment of laws and the creation of commissions, for their own regulation. The short-sightedness of telephone men caused them to oppose legislative regulation—at least, so long as they were self-deceived with the idea that their profits were larger than the courts or commissions would allow.

It has been pointed out that some of the elements which demanded regulation were unjustifiably selfish while other elements were and are in the interest of the common good. In a previous discussion it was shown that self-interest may be contrary to the general welfare, on the one hand, and that, on the other hand, it is possible for certain kinds of self-interest to be in perfect harmony with public need.

As long as any utility leader pursued the short-sighted policy of opposing legislative regulation—for the sake of gaining an unfair profit or in the hope of thereby gaining an unfair profit—he was opposing public welfare. It must be perfectly plain to all that such opposition was wrong in spirit, regardless of the right or wrong of regulation itself. By the same line of reasoning, it follows, also, that if any buyer of utility service, or any seeker of political preferment, either favors or opposes legislative regulation—for no better reason than that by so doing he may satisfy the unfair demands of buyers by helping them to get utility service temporarily at "bankrupt sale bargains"—he, also, is wrong, regardless of whether regulation itself is wrong or right.

The demagogue who opposes legislative regulation of utilities merely to please the unjustifiable selfishness of utility patrons, is so well known a factor that knowledge of his existence can be taken for granted. If a telephone manager were blind, he would have discovered this element of opposition through the sense of feeling—through the pocketbook nerve. The question in his case is not as to whether or not he exists, but what should be done about him. The answer to that question belongs in another section of our discussion. Therefore, with this mere reference to his existence we will pass on to an element or factor which may not, as yet, be so generally recognized.

The opposition to legislative regulation which some telephone managers have encountered from sellers of supplies, who are as short-sighted today as were the operating managers only six or eight years ago, is another element so well known that it needs only to be mentioned.

There are men who sincerely believe in municipal ownership as the thing to be sought and to be effected at the earliest moment possible. These men are unselfishly devoting their own time, their talents and their own treasure, to bestow upon the people what they believe to be a blessing. Cowards, thieves and fools may make trouble. Demagogues may create disturbances. But all of these combined, do not present as serious a problem, in some respects at least, as the well-meaning self-sacrificing advocate of immediate municipal ownership. The author does not expect every reader to concur at once in this statement. The reasons for assuming that the self-sacrificing reformer who advocates immediate municipal ownership presents a serious problem, are given in the next section.

70. *One of the Present Points of Controversy.*—The greater the efficiency of state regulation of utilities, the more distant will be the final day of (municipal) public ownership. . . . There is but one logical and one correct solution . . . utilities . . . must be publicly owned and operated . . . to divorce a necessary public function from the sordid motives of private interest. Vesting in the state the regulation of the city utilities seems to me nothing less than a weak and a cowardly dodging of plain civic dutv and responsibility . . .

Municipal ownership is coming rather through the trials and experiences of a city wrestling bravely with its own problems, working them out in its own way, *be it good or bad for the time being* . . . In those cities which have the lowest rates for public utility service . . . contrary to modern theory of the proper thing in utility regulation, the results came through competition. . . . The methods may not have always been "scientific" from the standpoint of the regulative expert—they were perhaps sometimes of the rough and ready, or rule-of-thumb sort—but it is not with methods that we are concerned here, but results.

Thus spoke Stiles P. Jones, secretary of the Voters' League of Minneapolis, Minn., at the conference of American mayors in Philadelphia in November 1915, in an address on "What Certain Cities Have Accomplished Without State Regulation."

In the opinion of the author, the foregoing leads us toward the center of the target of our main problem. As pointed out

by Franklin K. Lane, when he was chairman of the Interstate Commerce Commission, we, as a people, have decided to try out the experiment of regulated private ownership and operation in preference to political operation of utilities. In the words of Mr. Jones, we have the platform of those who, in all sincerity, oppose this experiment. They are convinced in their own minds that, whether the results be bad or good for the time being, the present experiment should not be given the best possible test. They are convinced that the greater the efficiency of the present plan, the worse it will be for human welfare.

In line with the thought of Mr. Jones is the following from the (then) mayor of Chicago, Mr. Harrison: "This argument is most unscientific, I am constrained to admit. The citizens, however, are more interested in good service and cheap rates than they are in the securing of these benefits by methods of scientific accuracy. Results are what the people are after, not a (so-called) scientific method of regulation."

71. *The Need of Ideals and Standards for Regulation.*—In the opinion of the author both Ex-Mayor Harrison and Secretary Jones would soon modify their demands after being made political heads of the railways, telephones and other utilities of their respective cities under the present state of municipal civil service conditions. For, in the same address (given at the the Conference of American Mayors) from which we last quoted, Ex-Mayor Harrison said: "The first requisite of public ownership is a rigid civil service, which appoints, holds and promotes absolutely on merit. *Without that, public ownership would be a public disaster.*"

If the newspaper accounts are to be relied upon, the controversy over civil service conditions—as applied to employes in existing politically-controlled or publicly-owned enterprises—far outweighs the controversy regarding public ownership, both in Chicago and in Minneapolis.

The leaders of business were groping in a darkness similar to that in which the advocates of immediate municipal ownership now find themselves. They ridiculed scientific management as much as Mr. Jones or Mr. Harrison ridicules scientific regulation. They fought red tape in business as hard as Ex-Mayor Harrison argued against it in regulation of utilities by a commission or a "business court." They fought for the rough and ready rule-of-thumb methods of the past. But scientific management and business engineering are in the ascendency today more than ever before. We can safely rely, also, upon the constant increase of truly scientific regulation—by the state—for publicly-owned and politically-operated utilities, as well as for those which are privately owned. The reason for this reliance lies in the fact that state regulation (harmonized with federal control) is the only means by which to attain the desired end.

Business engineers finally forced business managers to see that for every line of progress these must be not one but two sighting points. There must be the ultimate perfection as an ideal toward which to struggle for a thousand-year-pull. Coupled with and in direct line with this ultimate perfection, there must be the highest standard attainable for the actual performances and the actual practices of today and tomorrow.

In the opinion of the author the utility manager's greatest economic advantage will be obtained by accepting without debate the most perfect ultimate ideal or theoretical end that it is possible for the mind of man to imagine. It will tend toward the greatest economic advantage of all concerned for the telephone manager to do everything within his power and to work constantly and practically toward that ultimate end or ideal. In so doing he follows the best practical course for his business and at the same time makes it unnecessary for the mere theorists or reformers to use up all of their time contending about the theoretical or ideal features of the undertaking. The manager of the telephone company or other utility thus places himself and his undertaking where, by right, he may insist that the theorists shall use at least a part of his ability in helping to advance the chariot of existing realities, practices or standards a step or two in the direction of the agreed ultimate perfection.

(*To be Continued*)

June

Commencement Season—Different Kinds of Commencements

By J. C. Kelsey

Ordinarily the world hums wearily onward. Not even a war seems to interfere with the movements of the sun—not since Joshua's time. It rises and sets as serenely as if no human being had ever felt the warmth of its rays.

It has done this for many millions of years and no doubt men in their feeble efforts have merited its contempt more than once. As spring comes on, the world grows restive, and things even come to a stop, for June is the time when the world must take its annual medicine, even as you and I took sassafras tea to thin our blood.

On every stage, no matter how large or small the municipality, young men boldly proclaim the joy and reward of labor, and fiercely express a longing to fight capital and remove the shackles from human flesh. With ribboned diploma in hand, they sigh to jump into the seething cauldron of political corruption and reform it.

And Daughter is not far behind. Clad in becoming white, she longs to be a Nightingale and soothe the fevered brow of an unfortunate patriot. She chides the world for its cruelty to her sex. She openly sighs her longing to jump in and wake the poor old world from its sleep.

It only comes once to each of us, and no one should be denied the fleeting pleasure of handing out the sage advice of youth. I am reminded of it by finding on my desk an invitation to attend the 20th anniversary of my class, the class of '95. I remember well the seriousness of that event of twenty years ago.

Since that time I have learned that commencement exercises could be dispensed with without seismic disturbance. I have found out that the joy and reward of labor is mostly a pretty theme in the mind of the teacher.

I have chased capital awfully hard and have discovered that he is a pleasing fellow and deserved none of the rude shots and thrusts which the famous class of '95 gave him.

As we grow older, we find that many of our ideas were born of inexperience. We find out that the world is a pretty good place.

We learn that graft and corruption do not exist on a large scale except in the minds of reformers. We learn that reforms are usually for the benefit of the reformer. And above all, we learn that there are no shackles on the human flesh except those we put on voluntarily.

The thing that strikes me as most human is the idea of the individual that his own particular business has been singled out for ruin. I have heard telephone men say that the business was on its last legs. I heard that ten years ago.

Investment bond dealers cried out to the stars that "blue sky" laws would ruin them. Bankers cried out that the new banking law would throw them into competition with the government, and that ruin inevitably would follow. Corporations cried out that state and government control would ruin them. Manufacturers sent out pitiful appeals to prevent tariff reduction because it would ruin them.

But all are still here. No one is missing. The telephone industry is larger than ever. Bond dealers like blue sky laws and would not like to live without them. Bankers have found out that the government has not ruined them—it has helped them.

Corporations have discovered that state control has not ruined them—it has made them. And manufacturers who cried the loudest against tariff reduction, declared the largest stock dividends. The expected never happens.

Last week TELEPHONY told you of the separation of the railroads and steamboat lines. Neither railroad nor steamboat industry will suffer in the least. Standard Oil was dissolved but no one can detect any ruin. Railroads had to give up coal mines, and neither ran into ruin.

We were told that Europe could not go to war without the permission of financiers. We were told that war would bring about national bankruptcy. We are being told that the stoppage of the European war will cause ruin in America. We are told that we must put up a tariff wall or go to ruin.

Well, Europe went to war without permission of any bankers. No one was consulted. Germany is doing well financially and seems to get better as the war goes on. No nation in Europe has filed bankruptcy proceedings nor does any one see a chance of it.

There is no reason to believe that peace in Europe will bankrupt us. Nor need we fear that the rush of stored up goods will swamp some of our delicately reared and protected manufacturers.

We might as well admit that the boy and girl on the school commencement platform give us as good advice as the older and so-called more experienced ones.

June, this year, seems to be commencement time for Independent telephone securities. The year 1915 will stand really as our commencement year, a really wonderful year.

First came the plan of Mr. Knipe for financing Independent securities. Then followed Mr. Hubbell's plan for the disposal of securities. Both plans are wonderfully worthy and both aim at the root of our financial difficulties.

It has required nerve and money for both of these men to start out. It is the first real attempt of telephone men to mold the business the way it should go.

I shall be greatly disappointed, if not disgusted, if the telephone men of this country do not quickly respond to the messages of these two men.

The year 1915 is a good year to start. It takes fifteen years to weed out a business, to separate the chaff and wheat. It takes a long while to weed out the promoters and speculators, the men who come into the business only temporarily.

Today, it is safe to say that most telephone men are in the telephone business because it is their lifework. They are in the telephone business to stay because it has paid them to devote some of the best years of their lives to it. The longer I search the world, the more desirable the telephone business seems. After men get grounded into it, they enjoy it. They feel it and they appreciate it.

It is true that telephone companies have failed. There have been some startling failures.

Failure is not the worst thing in the world. It has its uses. There must be some failures to teach men the way to success by knowing what to avoid. Most of the failures in the telephone business were not organic failures, but failures due to mistakes of men, if not greed on their part.

One of the biggest of Independent telephone failures was due to a mistake at the start, yet each underlying member of the combination became successful when put back on its own feet.

It is human to err and no industry can be condemned because a few of its participants have made fatal mistakes.

Look at the failures of irrigation. One Chicago institution alone sold millions of dollars of irrigation bonds, and without exception every bond failed to cash its coupons. That does not mean that irrigation is to be put aside as a bad financial egg for the rest of time. Some day it will be born again.

Other institutions went wild over timber bonds, and the resulting failures were numerous—too numerous to mention. Yet no one can condemn the timber business as an utter failure.

It is a matter of fact that banks have reason to worry over many of their so-called standard investments. Some banks have made resolutions to buy no more railroad securities at all. They have receivers' certificates which have failed to pay interest. They have notes which matured and were not paid.

It is not the government which can be blamed over the present mistrust of railway paper. It is the railway management itself which is reaping the whirlwind of a poorly sowed wind of the past twenty years. Railroads almost have a commencement day at hand themselves.

Banks no longer look with favor upon whisky paper. The whisky depends almost entirely upon banks to carry on its business. As with all illicit enterprise, whisky paper pays a little higher rate than the legitimate rate of interest.

It is true today that the banks in America could crush the whisky traffic in less than one year if they cared to do so. But banks have to loan money in a conventional way—if they care to live peacefully with the bank examiner.

If banks have had their fill of railway paper and have absolutely given up irrigation, timber and other popular investments and are inclined to put a stop to whisky investments, does it not look better for public utility investments?

It strikes me that there never was a time when telephone security enterprises could be better started. It seems to me a time when telephone men themselves should rally to our financial flag.

It is a time when telephone men should invest what surplus they have in the telephone business. Surplus is the life of investment. It is a time when all men should have a commencement along the lines of future investments.

Let us stand on the threshold of a new life in financial matters. Let us commence now to see the wisdom of conserving our own business.

Why should we invest in the other fellow's industry when he believes that his own business is going to the dogs? Somehow, we all think the other fellow is happier and more successful than ourselves. Why is it that this foolish notion is so

well grounded in our lives? After you know the other fellow better, you will find that his weaknesses greatly exceed yours.

In a recent phenomenal rise in stock value, the man who made the most money out of it was really an outsider as far as business went. He was the lawyer for the company. He was not experienced enough in a technical way to know the weaknesses of the business. He could only see the good in the Independent telephone business.

Against the advice of the men who knew, he bought stock by the wholesale. The men who knew, sold a little because they knew too much. But the lawyer who did not know so much, saw only the good in the business he was connected with —and he made a fortune.

This man deserved every cent he made because he saw only the good in the business he was serving. He would not believe a word the pessimist said about the business going to the dogs. He could not see why the other fellow could do any better than his own associates. He did not believe in sending off for his things. He kept his purchases right in his line of business.

Some men have faith of a mustard seed variety—and they invariably lose.

As I said at the start, it is June time. We are planning vacations already. Every fishing hole, bathing beach and lake is spotted. Like true Americans, we are planning on a way to spend our resources. We are not planning to save a cent, a dollar, or the business itself.

I wish we could get more of the European spirit in our ways of doing things. Not only do we ignore the thrifty spirit of Europe, but we go further and borrow the money to go on that vacation.

Like many telephone companies, we expect to borrow the money for the rainy day. Wise is the man or corporation who saves for the rainy day. He not only protects himself but he gives industry that much added impetus.

No one is advocating that you do not have a good time and plenty of vacation. All work and no play is deadly.

We expect higher salaries. I have heard telephone men say that there is no money in the business for them. We expect a great deal from our business. I have heard others say there is no future for them.

There is no future for any human or industrial grasshopper —both perish when the winter comes on. Let us hope that the day is at hand when the telephone business will pull itself far away from the grasshopper class. We want to be in the ant class.

We cannot join the class of the ant if we cannot enthuse with him over his thrift. We want to be comfortable all winter—to have something stored up—but are we willing to work far enough into the storage stage?

The telephone business will not be a real business until it can get beyond the stage of improvidence and go into the era of thrift and providence. That is what these energetic telephone men are trying to do when they ask you to join them in a financial way. They want to make you really Independent.

I hope you attended the commencement exercises in your city. I hope your son or your daughter went the limit in protesting the world's indifference to that which is good and noble. I hope you applauded them furiously and gave them a taste of fickle, fleeting glory.

I hope you may do a little commencement work yourself. I want to see you protest against our indifference toward what is good and noble in our own business.

MORAL: You cannot commence too soon.

Annual Meeting of New Ulm (Minn.) Rural Telephone Co.

The financial report for the past year, presented at the annual meeting of the New Ulm Rural Telephone Co., of New Ulm, Minn., places the assets of the company at $75,749. The liabilities consist of $61,450 capital stock, $4,299 in dividends payable, and $10,000 in undivided profits. Since the organization of the company in 1905, $35,622 has been charged off for depreciation.

The company had a very successful year during 1914, the receipts totaling $25,776, which amount is exclusive of cash on hand April 16, 1914. This sum was $4,525. The gross earnings for the past year were $23,344, an increase of $2,000 over the previous year.

The telephones in the city number 1,102 and in the rural districts, 645, making a total of 1,747 telephones. This is a gain during the year of 77 subscribers in the city and 11 rural subscribers. There were 158½ miles of pole lies in Brown county and 162½ in Nicollet county, making a total of 321 miles of pole lines.

The board of directors recently declared the usual 7 per cent. dividend, which was paid May 15.

The following directors were elected for the ensuing year: Fred Pfaender, J. P. Graff, H. P. Bastian, F. H. Retzlaff, Wm. James and Jos. Wiesner, of New Ulm; H. Fritsche and J. J. Sperl, of Cottonwood; Wm. Gluth and Fred Rolloff, of Milford; H. A. Hillesheim and John A. Sellner, of Sigel; N. Reinhart and Henry Mueller, of Courtland; L. P. Bushard and A. Russel, of West Newton; Frank Wellner and Fred Wellner, of Lafayette. The directors will meet in the near future to elect officers for the ensuing year.

The advisability of erecting a new exchange building was discussed but no definite plans were made.

Annual Report of New Brunswick Telephone Co.

The gross earnings of the New Brunswick Telephone Co., of St. John, N. B., for the year ending March 31, 1915, as shown by the report presented at its annual meeting held recently, were $455,067. The total expenses were $351,912, leaving a net revenue of $103,155. Dividends to the amount of $93,168 were paid during the year, leaving a surplus of $9,987 for the year 1915. Adding that amount to the surplus on March 31, 1914, makes a surplus, on March 31, 1915, of $12,621.

The statement of assets and liabilities is as follows:

ASSETS.

Plant	$1,665,831
Supplies	52,141
Accounts receivable	36,887
Liquid assets	92,495
Total assets	$1,847,354

LIABILITIES.

Capital stock	$1,259,540
Debentures	100,000
Total reserve for depreciation	430,102
Accounts payable	13,603
Dividend declared March 25, 1915	31,489
Total liabilities	$1,834,734
Surplus	12,620
	$1,847,354

The increase in subscribers for the year ending March 31, 1915, was 1,171, as against 1,604 and 1,624 in each of the two years preceding.

Western Ontario Association To Hold Convention.

The annual convention of the Western Ontario Telephone Association will be held in London, Ontario, Canada, on June 18. A number of addresses will be made on live topics by men prominent in the telephone field. A question box will be held so that any subject of interest may be taken up.

Who Is the Telephone Company in Public's Estimation?

The President, Office Boy, Operator, Cashier, Troubleman, Complaint Clerk, All Share This Distinction Whenever They Come in Contact With Any of the Public—Paper in The Telephone Bulletin Points Out Little Things on Which Company's Reputation Hinges

By Walter S. Allen

Every employe of the telephone company, from the president down to the office boy, is at some time or other, to some part of the public, the telephone company, and the company as a whole is judged by each and every one of us, by what we do and by how we deal with the people we meet.

Everybody knows that if we happen to meet a stranger and he finds out that we are connected with the telephone company, he immediately makes comments on the company, some friendly and some unfriendly, and these we find to be founded on a single act of courtesy or discourtesy on the part of one particular employe rather than on any matter of company policy.

Employes Who Come in Contact With Public.

Let us take first the operators. These are the employes with whom the public comes in closest touch. Three things are expected from the operators. These are promptness, patience and politeness, and it is rare when the operators fail in these respects. We all know when we go to the telephone to put in a call we expect an immediate answer and if we wait five seconds or 10 seconds, it seems to be a very long time. If the answer of the operator, when she comes in, is polite and pleasant, this feeling of irritation disappears at once.

The operators, who are naturally closest to the public, are those through whom the company is most often judged, but they are only a part of the whole and when we look carefully into the relations of all of us to the people who use our service, we can see that managers, traffic men, plant men and office men —everyone who in any way meets anybody who is not a member of our organization—can do something to convince these people that we want to give them a square deal.

It is true that the operators have a great deal to contend with, with all kinds of voices and pronunciations and especially in a town with varied foreign population where it may be sometimes difficult to know exactly what is wanted, but every operator must realize that to the person who is calling she is the telephone company and that the company to which we all belong must suffer if she should fail in these three requisites of promptness, politeness and patience.

People have often very curious ways of calling. I know a man who is so extremely polite that when he is asked for a number, instead of giving it at once, will say: "Will you please have the kindness to connect me with number so and so." By the time he is half through this the operator, who is busy, has repeated "Number please," and this interruption so up-sets the caller that he has to begin his little speech over again, and the operator again asks "Number." The final result is that the caller loses his temper entirely and abuses the operator. We must learn to deal with the subscriber as he is and not as we want him to be.

The information operators, the chief operators and the toll operators, find it still more necessary to remember that they are the telephone company. Information operators, especially in small places, are supposed to know everything about everything and their patience in answering the most foolish kinds of questions often determines the popularity of the company. Chief operators are called upon by subscribers who are sure that they have grievances against the company and these people must be smoothed down and made to see that the company sympathizes with their troubles and wants to remedy them. Toll operators are expected to find people somewhere under most complicated conditions.

Once when I was in the South, I heard a conversation between a negro who wanted to talk, as he said, "long distance," and the operator at the pay station in the telephone office. The negro came into the office and began:

"I want to talk to Miss Liza Green at Po't Gibson." The pay station operator asked: "Has Miss Liza Green a telephone?" "Shore she has. She lives in one of dose big houses down tha'r." "Do you know the number?" "W'y no Boss I don't know that yar number but I sho' knows thar's a telephone in that yar house." "Well, where is that house?" "I don't know Boss, but Miss Liza Green she's de cook in one o' those big houses down thar." "Well, what's the name of the family?" "Well I don't exac'ly know what that name is but its one of those bes' fam'lies down thar to Po't Gibson."

On this small base the operator began work and before long the caller was talking "long distance" to "Miss Liza Green in Po't Gibson," to his own great satisfaction and the benefit of the company. Patience and perseverance made a friend of this man and gave him the belief that the telephone company could arrange for him to talk long distance to anyone, anywhere. It may seem a good deal of trouble for one man on one call, but we are serving the public and the public is only the collection of single men.

One of the most important of those who can keep the public on friendly terms with the telephone company is the troubleman. When a subscriber finds a telephone out of order and is unable to use it, he assumes that the telephone company will restore it to service at once if it can and of course we undertake to confirm that belief by trying to do the work as promptly as possible. Now, when the troubleman comes into the house he is not only told of this particular grievance but he is usually told of all the grievances of the past weeks and months and the troubles of all the neighbors and it is no answer for him to say: "Well, there was a thunder storm and that is the reason that your telephone is out of order," or to tell the subscriber that no place has any better telephone service than we have, because that does not in any way sooth the feelings of the subscriber.

The troubleman must be sympathetic. He can tell about how quickly the company tries to restore service, and if it was a thunder storm that threw out several hundred telephones, he can tell how many the company has already gotten back and how quickly the work has been done and show the desire and effort of the telephone company to overcome the difficulty. As for previous grievances, he can explain politely how all that is necessary is to tell the company about the troubles when they happen and show that where there is a grievance the company is only too glad to have it promptly righted. Such explanations make a friend of the subscriber. Above all things, when he is told of grievances that do not fall within his own department, he should never say: "Well, that belongs to another department," but he should say: "I will see that the right people are notified about these troubles and see what can be done to help you," and he should do this that he has promised promptly.

The Installer and the Public.

An installer can make friends for the company of a great many people if he takes pains to show care and neatness in his work, if he puts a cloth on the floor to catch plaster, if he sweeps up his chips. If he shows an interest in placing the telephone just where the householder wants it and consults with

the people in the house as to the proper place, the subscriber feels as if he is really of some interest to the company. The ideas of the householder and the installer may not agree, but with some care in explanation the result will usually be satisfaction on both sides. Don't let him be too sure he cannot meet the subscriber's wishes. I personally have had one experience of this kind. I wanted my telephone placed in a closet and the bell placed outside in the hall. I knew it was perfectly simple to do this, but I was assured by the first man who came to my house that such a thing was an impossibility, with the result that I would not let him do as he wished and so he had to go back to the office with the work undone and another man had to be sent, who did what was wanted.

What the Construction Man Can Do.

A construction man putting up a pole line or running new circuits can do a great deal towards establishing pleasant relations with all the people along the line. If he uses care in distributing his material so that it does not obstruct the highway and does not come in front of a man's driveway; if he sees that a slight shift of a pole two or three feet from the spot originally planned will allow a farmer a free outlet from his barn, whereas the original point might bring the pole so close that a wagon would be liable to hit it; if he tells the farmer he will put the pole where it will not trouble him and does it, that farmer becomes a friend; whereas if the pole was set so that, while perfectly safe, there would be danger of hitting it under certain circumstances, that farmer would have a perpetual grievance against the company because he would recognize in this form of construction the telephone company.

In stringing wire, if care is taken to keep the streets as free as possible from hanging loops so as to interfere as little as possible with traffic, people going by will say: "The telephone company is careful in doing its work." Only a few days ago I was obliged to bring the automobile to a quick, sharp stop because of a loop of wire hanging in such a way as would have caught the car and this was on a corner where only one side of the car track could be used. I am happy to say that this was not the telephone company.

Perhaps as common a source of bad feeling as any has been careless tree trimming. When a maintenance gang is sent out with orders to trim trees, it is of vital importance that no trees be trimmed without letting the people in front of whose houses the trees are located know about the work. While this is usually done, it sometimes happens that trees are trimmed with only one idea, and that is to clear the wires. No thought is given to the people who own the trees. If the people are consulted it is usually possible to come to an agreement as to how the trees shall be trimmed in a way perfectly satisfactory both to the owner and to the company.

It will be found that in some of the cities where there are a great many maple trees which grow fast and grow low, it is difficult to keep the wires trimmed out, but I recall going into a city in northern New York where the company had trimmed out the maple trees for two blocks on both sides of the streets up to a height of nearly 20 feet, and this had been accomplished by the manager going to these people and showing them how he would trim the trees on both sides so as to leave them symmetrical, and he convinced them that he would really make a better looking street than it was before. This was in a good residential district and the work was done in such a careful way as to carry out the promises of the manager and the people were so well satisfied that when he went to them and asked for leave to take down an old tree on a street corner in order to make room for a corner pole, they were ready to give their consent.

In the West and Southwest where trees are scarce and very highly prized, this is one of the most serious problems that the companies have to meet—how to get their wires through the better residential districts, and I recall one city where the residents demanded cables out in the outskirts and refused to allow any trees to be trimmed for open wires. They sat on their door-steps with shot guns to see that their wishes were carried out. In the end the company ran a cable through these trees, as it ought to have done as soon as the controversy arose.

When a right of way is wanted for a new pole line, and especially if it is wanted over private property, the manner in which the land owner and the highway authorities are approached counts for a great deal. A right of way man undertaking this sort of work is very prominently, in the eyes of the farmers, the telephone company.

The manager of an exchange who is often appealed to by people with grievances which may or may not be due to anything within his power to control, must be a man who is capable of sympathizing with the subscribers' grievances and who can put himself in the position of the subscribers. In other words, he must recognize that a subscriber has a grievance. It may be real or it may be imaginary, but to tell him that he has no grievance and he only imagines it, that the service is generally good, that the troubles are very often of the subscriber's own making, is the worst possible way of making friends for the company. He must be firm in backing up his subordinates but he must be sympathetic with the subscriber and especially if he promises to look into a grievance he must do so and even if it has been remedied, he should take pains to let the subscriber know that his case has been considered and the trouble remedied. A great many times it is considered all-sufficient to remedy the trouble. While the subscriber may find that everything is going smoothly he does not feel that any attention has been given him personally. After the trouble is remedied and he is asked if he finds it all right, he feels that the telephone company has some definite personal relation to himself and he will tell his friends of the prompt and friendly manner in which troubles are remedied.

The legal department in settling claims can make the telephone company popular. To assume at the start that the claim is unjust and to give the impression that this is only an attempt to extort money from the company, is sure to produce trouble. I have in mind an accident case in a different kind of company than a telephone company, where a man appeared at the office and presented a claim for an accident which had happened to him and which he would gladly have settled for $25. Unfortunately, at that time the company was obliged to turn it over to an insurance company and the agents of the insurance company started out with this proposition that the man was trying to beat the company, with the result that he became very angry and hired a lawyer and the insurance company finally settled the case for $600, which it considered was a good settlement. If this case had been approached at the start in a friendly spirit, an expenditure of $25 would have made a friend of the man whereas an expenditure of $600 left the man with a distinct grievance.

I remember in a gas company with which I was once connected, a case where a gas main broke in the street and gas got into the basement of a house and killed two canary birds. There was no gas used in the house but the old woman who owned the canary birds came to the office and told her story and said she thought that the company ought to pay for them. She was given $3 to buy new birds and a few words of sympathy, and she became immediately a firm supporter of the gas company and practically a solicitor among her neighbors for new customers.

When the Advertising is the Company.

The telephone companies are now doing a great deal of advertising and in this advertising we put out claims as to what we can do in the way of service, convenience and speed. The advertising men are told that they can promise this thing and that thing. Whenever the other branches of the business fail to keep up to the promises made to the public through the newspapers, the advertising department becomes the telephone company, and suffers. It has to rely on the assurances of service as

given by other departments for its statements, but people attack the company for its so-called false statements.

The cashier's office is one of the departments where people with grievances come. While the cashier may know he is right, it does not do for him to simply assert that the subscriber is in error and that the company does not make mistakes, because under those conditions the subscriber goes away with a feeling that no consideration whatever is given to what he considers to be a real grievance.

We all make mistakes sometimes and we must not be too cocksure that the errors are all on the subscriber's side. The cashier who, in this case, is the telephone company, must try and look at the complaint from the subscribers' standpoint and see whether there may not be something in it. He must look into the matter not for the purpose of proving that the subscriber is wrong but for the purpose of finding the truth. We do more harm to the company and prevent more the establishing of friendly relations with our users by asserting that we must be right and the users wrong than by any other thing I know of. When we take this attitude we convince people that we do not care for their good will.

The Directory Department's Responsibilities.

The directory department, through oversight or for one cause or another, often fails to get a man's name right or a name is omitted in the next directory which appeared after a new subscriber has taken a telephone. I was in a manager's office once in a far western town where a man came in who had a real grievance and who had failed to obtain any satisfaction from the directory department or from the cashier and had come to the manager in a very unfriendly temper. He had taken a telephone immediately after the appearance of a directory and had been assured that his name would be in the next directory. By a mischance, it was omitted, and he complained and was told that there was no question but that it would be in the next one, but again it failed to appear so that for more than six months after he had had a telephone, his name was not listed in the directory.

He told the manager that he felt as if he was entitled to some redress and complete assurance that his name would be in the next book. The manager saw the force of this suggestion and sympathized with the man and asked him what he felt would be a proper redress for the company to make. After some talk the subscriber suggested that if they would guarantee that his name would be in the next directory and would rebate him $2 he would be entirely satisfied, and this the manager immediately agreed to. This was a very reasonable request as the man was paying $5 a month for his telephone, but the result was that he left the office entirely satisfied with the company and the treatment it gave its subscribers.

Another thing in connection with the cashier's office which sometimes and in some companies produces irritation, is the form letters which are sent out asking for delinquent bills, and it seems to me that the system which is being more generally adopted of having the cashier's office first call up the subscribers and call attention to the bills, is much better than a formal notice and leaves the subscriber in a better frame of mind.

From top to bottom this question of the employes dealing with the public is of the most vital importance. Even the most humble office boy can give a good or bad impression of the company by the way in which he receives callers. To be received by a very superior boy and to have a pad of paper thrust at one with a curt statement—"Write your name and business," gives anyone who desires to meet some official a feeling of antagonism, but a polite request for the name and a readiness to give information as to whether the person desired can be seen, creates a good impression. An office boy's place sometimes calls for tact as well as politeness.

I recall a case in a small city in Louisiana where during the noon hour the office boy had to attend the toll station. I was waiting for the manager when a negro came in and said he wanted to talk to some outside town and said to the boy: "I want to talk a dolla's wuth, and cut me off when I've talked that much." He got his number but the boys' attention was called to something else and when the negro came out of the booth the boy said the charge was $1.60. The answer was: "Well, I done tol' you to stop me when I talked a dolla's wuth." The boy saw he was wrong and that it was up to him to get the 60 cents without trouble, so he said, in a very pleasant way

"Well you did talk that much and I shall have to ask you to pay it." The negro said "Well boss, I shore did talk that but I ain't got but a dolla'." The boy was then up against it again and it was up to him not to lose the 60 cents, so he said, "Well, can't you get it somewhere?" The negro thought awhile and then said he could go uptown and get it and was about to start when the boy though he might not come back, and so he said: "How do I know you will come back? I don't know you, you don't live 'round here, do you?"

"No boss, I lives up the river."

"Well can't you leave me something to be sure you will come back?"

"I ain't got nothing to leave but I'll shore be back."

"Well," said the boy, "you leave me your coat (it was a warm day and the man had his coat on his arm), and I'll take care of it till you come back with the 60 cents, because you know I shall have to pay it if you don't and you certainly did talk."

"All right, boss, I certainly did talk and I will leave you the coat and go get the money." He did this and in about fifteen minutes was back with the money and got his coat. The boy, by tact and pleasant manners, had worked it out so that even if it was his fault that the man spent 60 cents more than he meant to, the company got the money and there was no disturbance. If the boy had simply said: "Well you talked and you have got to pay," there would have been a row and the negro would have bolted and bragged about how he beat the telephone company, which was in this case the boy, out of 60 cents.

I have tried to call attention to the public's idea of the telephone company. The company as a company represents nothing definite to us as individuals, but we associate the telephone with people. We associate it sometimes only with voices, as in the case of the operators, we associate it with installers and troublemen who come into our houses, we associate it with managers and cashiers with whom we have business dealings, or with gangs we see doing work on the streets and roads, but it always, to everybody, is one or more individuals and by these individuals and by the way in which they deal with the public, the telephone company gets its reputation for courtesy, fair dealing and good treatment.

Our Common Interests.

We are all really one homogeneous body and we must bear in mind that sometimes our own little slips or our own failures to be accommodating, not only injure ourselves and the company we are working for, but they injure the whole telephone business in the eyes of the public. It is not so much the actions of the management which lead to the unjust attacks on the telephone company and the public dissatisfaction over anything, as it is the little every day matters of friction between some one of us and some one of the public—its the sum of these things that makes the trouble.

We must learn that we are all bound together by one common interest, and that is to see that we furnish the public with the telephone service it wants, with the telephone service it needs, with as good service as can possible be secured and we must attempt always to keep up the most kindly possible relations with the public from whom we get the revenue that pays to all of us our wages. We must realize that the company is not simply the inanimate thing which pays us wages, but we must remember that we are the company and that the company is judged by us.

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

The answer to these questions will be found in the reading section bearing the same number. Answers are not to be sent to TELEPHONY for criticism. For the benefit of those desiring the advantages of a correspondence course, the Engineering Extension Department of the Iowa State College has volunteered to answer questions and criticize replies to questions and solutions of the problems which will be presented from time to time in connection with the course. No charge will be made for this service and the offer applies to all subscribers of TELEPHONY regardless of whether they live in Iowa or elsewhere. Correspondence should be addressed to the Engineering Extension Department, Iowa State College, Ames, Iowa.

120. How is the direction of the pulsating current from a magneto generator with a commutator reversed in direction without making any changes in the generator itself?

121. What is the purpose of the generator shunt?

CHAPTER VII. The Magneto Line.

122. *Transmission efficiency of a telephone circuit.* We have seen that the telephone receiver requires an extremely small amount of energy for its operation. It is, in fact, one of the most sensitive electrical devices in common use. Owing to this great efficiency we are enabled to obtain satisfactory results, in the way of transmission, with an expenditure of energy at the sending station that is very small. The intermediate circuit must, however, deliver as much as possible of the current produced in the secondary of the induction coil at the sending station to the receiver at the receiving station. There are three factors that affect the efficiency of a telephone circuit in the transmission of voice currents. These three factors are resistance, capacity and insulation. We need give no consideration at this time to the disturbing effect of neighboring electrical circuits.

123. *Effect of resistance upon voice transmission.* The effect of the *resistance* of a telephone circuit on the transmission of the voice currents is in conformity with the operation of Ohm's Law. The current produced on a circuit under any given set of conditions is greater when the circuit is of low resistance than it is when the resistance is higher. It is clear, therefore, that inasmuch as the reproduction of the sound waves depends upon the strength of the currents in the winding of the telephone receiver at the receiving station, the influence of resistance is to weaken the resulting transmission as the resistance of the circuit is increased. For this reason copper wire is often used in place of iron, while large iron and copper wires are used for toll circuits between cities.

124. *Charging of a circuit.* The effect of *capacity* is also to weaken the incoming voice currents, but in a different way. In order to clearly understand the nature

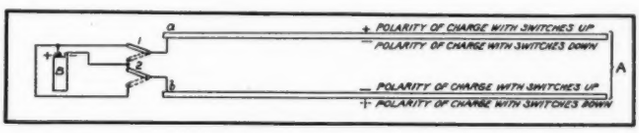

a
+ POLARITY OF CHARGE WITH SWITCHES UP
— POLARITY OF CHARGE WITH SWITCHES DOWN
B
A
— POLARITY OF CHARGE WITH SWITCHES UP
+ POLARITY OF CHARGE WITH SWITCHES DOWN

Fig. 50. Capacity of a Telephone Line.

of capacity and its effect on telephone transmission, it will be necessary to consider for the moment the nature of the electrical conditions when an alternating current is placed on a pair of metallic conductors such as a telephone circuit. Consider for a moment the condition shown in Fig. 50. This represents in theory a pair of telephone wires five miles long, carefully insulated and dead-ended at the point *A*. This would be exactly the condition of a metallic line circuit broken on both sides at a point five miles out. In the illustration, an ordinary dry cell is shown connected to the two wires of the circuit, through two switches, 1 and 2, the positive or carbon terminal to the upper wire and the negative or zinc terminal to the lower.

Under the conditions outlined, current will flow into the wires from the battery for a *short* time. For a working theory it can be considered that the wires each absorb a definite amount of electrical current. Inasmuch as the wires are broken at *A* and there is no apparatus connected to the circuit, this current will not be sustained and continuous. It will continue to flow until the wires are fully charged when it will stop. At this time the upper wire will show a positive charge and the lower one a negative charge. If the voltage were measured between the points *a* and *b* when the current had ceased to flow, it would be found to be exactly equal and in *opposition* to the voltage of the battery *B*. In other words, the voltage of the *charge* in the two wires started at zero and rose to a value equal to the voltage of the battery. The current, or amperes, flowing into the two wires, started at a very high value and decreased to zero at the end of the charge. It is important to remember that as the *voltage* of the charge *increases*, the *current*, or amperes flowing, *decreases*.

Now suppose that a change in the connections between the battery *B* and the two wires is made by operating the switches 1 and 2 so that the positive pole of the battery is connected

to the lower wire and the negative pole to the upper wire. When this has been done the switches will occupy the position shown by the dotted outlines. The positively charged wire will be connected to the negative pole of the battery and the negatively charged wire will be connected to the positive pole of the battery. We have seen that the voltage of the charge in the wires is equal to the voltage of the battery when the charge is completed. Therefore, after changing the connections between the wires and the battery, there will be available for charging the wires in the opposite direction, a voltage equal to the battery voltage plus the *charge* voltage or twice the battery voltage. This will have the effect of the charging the two wires in a shorter time than was required for the first charge and in the opposite direction.

The current will be of the greatest strength at the beginning of the charge and the voltage of the charge will start at battery voltage in one direction, pass through zero and reach the battery voltage in the opposite direction. If the switch were again thrown to its first position, the wires would be charged in the opposite direction. This action might be continued indefinitely, a definite amount of current flowing into the open circuit each time the battery were reversed. It is very clear therefore that any other current, periodically reversed in direction, would flow into the pair of open wires in the same way if it were connected to them in place of the battery and switches. If the current were direct, such as the battery, and no reversal took place, it is clear that no current would flow into the open wires after they had been completely charged.

125. *Effect of capacity upon voice transmission.* Let us suppose that the alternating current is reversed often enough to completely charge the two wires each time after neutralizing and withdrawing the previous charge from them. If the circuit wires should then be connected at the point *A* to another pair of open wires, the total length of the circuit would be increased. The new circuit of greater length would require a longer time to charge than the shorter one and the same alternating current would only partially neutralize and withdraw the previous charge in the available time between reversals. There would never be sufficient time to complete the charge to full voltage on the two wires of the circuit. Therefore the charge *voltage* between the two wires at the distant or receiving end of the circuit would be *less* than the charge voltage at the sending end.

We have seen that the reproduction of sound in a telephone receiver is dependent upon the strength of the voice currents in its windings. But in the illustration under discussion we have seen that when the *capacity* of a telephone circuit is increased, the voltage between the wires of the circuit is less at the receiving end than it would be if the *capacity* of the circuit were less. This is due to the short periods of time between the reversals of telephone voice currents. Since the effect of increased capacity is to reduce the voltage at the distant end, it will reduce the strength of the current in the receiving instrument. This will cause the transmission to be impaired accordingly. In other words, if the capacity of the circuit is greater than would permit of a complete charge being imparted to it each time the current is reversed, less energy is delivered at the distant end than is imparted to the circuit at the originating end. We have seen that the telephone voice currents reverse their direction very rapidly. For this reason it is necessary to fix the capacity of all telephone circuits at a figure as low as it is possible to obtain.

There is another way of considering the effect of capacity on telephone transmission. We have just seen that the capacity of a circuit will permit the flow of alternating current into the circuit even though the circuit may be entirely open at the distant end. The voice currents are alternating in character and it is desirable to deliver as strong a current at the receiving end as possible, in order to secure good reproduction of the sound waves by the receiver. If the circuit has any seriously great capacity, a part of the alternating voice currents will never reach the distant telephone. They will, in effect, pass from one wire to the other before reaching their destination and will be lost. The sending telephone will expend more energy on the circuit than the receiving telephone takes from it.

126. *Insulation and voice transmission.* It is necessary to maintain the insulation of the telephone circuit at a high point in order to confine the voice currents as much as possible to the wires and instruments. If the insulation is low, it means that the resistance from one wire to the other is low and a part of the voice currents will take an intermediate path from one to the other. When this occurs, the effect is that of a loss of a part of the current sent out on the wires by the sending station. Inasmuch as the telephonic voice currents are extremely weak at the sending station, a slight loss on the connecting circuit becomes very serious.

The ideal telephone circuit must have as low capacity as possible, as high insulation as possible, and as low resistance as possible. Telephone engineers design all parts of the transmission circuit in such a way as to attain these requirements to the greatest possible degree. It is necessary to remember that any given *capacity* will have a more serious effect in the impairment of transmission of high frequency currents than it would have on the transmission of currents of lower frequency. This is owing to the shorter time available to charge the entire circuit each time the current is reversed in the case of high frequencies. (*To be Continued*)

Keeping the Telephone Directory up to Date.

In view of the fact that a large proportion of the telephone stations are used by different people, a device adopted by the Cumberland Telephone & Telegraph Co., in Louisville, Ky., to keep the directory up to date, so far as discontinued stations are concerned, is particularly interesting. The telephone user calls a number which has been taken out and in due course is referred to "Information," who asks:

"What number are you calling please?" Then, if such happens to be the case that the telephone called has been taken out, she adds:

"Please strike that name and number out of your directory. The telephone has been taken out."

It is obvious to the telephone fraternity the saving of time and improvement of the service that would result if the suggestion were acted on and it becomes almost equally so to the subscriber. He, with the book open to the "place," can in a moment draw a line through name and number, and there are sure to be no more calls for that same number from that particular station, while it takes only a moment's attention to suggest that the deletion be performed.

Stirring Stories of Lineman's Devotion to His Job

Heroic Deeds Under the Trying Conditions of Exposure Met with at Some Seasons on the Plains and in the Mountains Recounted by Writer in the New York Press—Troubleman's Daily Work Becoming a Theme for Romance

Jim McDonald was reclipping a telephone cable on a pole at an intersection of country roads when his hand line became uncoiled and dropped to the ground. He was absorbed in his work to notice the line, and it became entangled in the machinery of a speeding automobile. The car stretched the line out straight and it snapped like a violin string. The wire on which McDonald was swinging from his leather belt was vibrated so violently that he was sent whirling around it, somersault after somersault, until he had made a dozen revolutions. When the wire had steadied McDonald nonchalantly slipt over the pole, unhooked himself, and came down with a grin. "It's the first time I ever looped the loop 30 feet in the air," he chuckled, and went on about his business. McDonald is only one of hundreds of linemen who have thrilling experiences, many of which are tragic. There is a peculiar fascination about the work of the lineman, and when underground conduits took the place of poles in the cities, he refused to be changed from an aeronaut to a mole, preferring the great open spaces of the country.

It is small wonder that the average city person has forgotten the existence of the lineman of old, for he seldom breaks into the news nowadays unless in a moment of carelessness or of the contempt bred of long association; while standing on a grounded wire he lets his hands fall lightly on the line of an electric light company which so often shares the poles with the telephone concerns. Even then the matter is worth but a paragraph, and in the city papers, where the "little stuff" is so common, usually finds its way to the wastebasket or is wedged in with that worn one-line head, "Killed by Live Wire."

But while the lineman as a source of news, or as the concrete object of public curiosity, long since has slipped into the discard, he still exists, has grown immeasurably as an important cog in business, and romance has been added rather than deducted from his work.

In the old days the scope of his work was confined to the environs of certain business centers, such as the big cities, but today it is stretched clear across country from the Atlantic to Denver, and there is now under way the extension of a telephone wire across the Rockies that will link New York direct on the talk line with San Francisco. And those 3,000 miles of valley, of mountain, of desert, of sun-baked alkali, and of frozen desolation are the home of the linemen who, with the sinking of the city telephone systems, moved outward to follow the overhead wires whose song was and will always be their summons.

The life saving service that patrols the seacoasts has for many years been the center of a little world of romance of its own, but who ever heard of the wire patrol—the patrol that year in and year out, in all kinds of weathers, marches its beat ceaselessly across the continent to fend American business off of the shoals, to keep always flowing smoothly and steadily without break the telephone and telegraph stream on which is built the long distance commerce of today?

To be precise, the Bell telephone system has in its employ about 15,000 men, who spend all their time watching the telephone wires that bind the country in a dizzy network of lines between cities—the long distance wires over which so much modern business is transacted in this age when time is literally money. This army of 15,000 is operated and managed much like a regular army. It has its divisions and sections which correspond to regiments, and stationed with fine discrimination over the greater part of the United States. A large part of it is on duty constantly in watches or shifts. The remainder is kept in reserve, as a general keeps his reserve forces, to be called into action when emergency demands.

The enemies which this army must meet and conquer—for it must conquer, and it is its boast that it never yet has met defeat—are snow, wind, sleet, flood, fire, and lightning. In other words, the elements are its foes. This army—or the wire patrol, it sometimes is termed—is made up of the old-time linemen.

It is a grim, lonely life they lead, those who have the watch in the long reaches of the far West and far South and far North wires. It is the duty of the linemen first to prevent breaks and then to mend them. That is the word they carry from headquarters when they push their faces into the thrust of a Minnesota norther, or plod nimbly over the sand in an Arizona sun. And they must walk. Walk. Walk with their eyes on the gleaming red threads of the wires on the crossbars of the poles, ever on the alert for a break, constantly watching for something that might cause one. On the big through wires the sections of patrol vary from 35 to 100 miles.

There usually are several men assigned to each section. They make their daily inspection over the entire route in relays, or, if the section is a short one, in shifts. But they make it somehow every 24 hours, storm or sunshine, for a break not corrected would mean a sudden checking of business between East and West that each moment would cost thousands of dollars. And it is in bad weather that the demands for guard are most imperative. With snow to their waists, often half buried in the drifts, with a 40-below gale roaring down on them from the hills and only the glint of the wires overhead to guide their course, many a lineman has struggled all night to complete his patrol, so that some business man, lounging in his smoking room in New York, could put through a deal involving a few hundreds or mayhap a few thousands with another man in Denver.

The patrol is bad enough; it is when the breaks occur that the lot of the lineman is hardest—when the wires have gone down for miles with the weight of the frozen sleet incasing them an inch thick, when the poles have been snapped off by the rush of the hurricane, when the floods have undermined them and they have toppled with miles of water barring approach to the scene, when terrific electrical storms have grounded half the telephones over a dozen square miles and the lightning has burned out wires and splintered poles and crossbars.

Out on the long distance wires the lineman who goes on patrol carries a kit which, though necessary, would be more than the average man could lug. Over his shoulder are a coil of wire and his climbing spurs, the steel-tipped leggings with which he scales the lofty poles. About his waist are his pliers, his nippers, his wrenches, and his other tools. In his specially constructed overalls he carries a tester and battery coil. Add to this on stormy days his oilskins or poncho and his boots and a 20-mile hike, and—well, try it yourself.

Once he has found trouble his work has only begun. The side of a telephone, ice-crusted and snow-sheathed, on a day with a 60-mile gale blowing a zero temperature through your garments, is not the most comfortable location in the world. The copper wire sticks to your hands like threads of white-hot metal. The ice cuts and scrapes. The steel of the spurs on the sides of your boots gnaws at your half-frozen feet like burning sores. And always you must be steady and sure in your movements to escape that 50-foot tumble to the frozen earth, and always you must keet your wits about

you to avoid those electric wires which run along the telephone cables and the touch of which means a quick journey into eternity. Danger is present in many forms.

This is the work of the lineman, and for the faultless performance of it he earns as much as $3 a day, sometimes as much as $3.20.

Philip Kelsey started from St. Cloud, Minn., one February day to cover a 14-mile inspection westward along the line. He carried his usual kit and a lantern, for it had been snowing, and Kelsey did not know whether he would reach his destination, a shanty the linemen used, before dark. Two miles from St. Cloud he struck a cut between two little hills and went into a snowdrift over his head. That was the last that was seen of him for two months. They found him in the spring. He had taken all the tools out of his pockets, the wire and the spurs from his back, and he had put them under his feet, hoping they would act as a sort of base and hold his weight until he could work himself out. But the snow was new and light and it was nearly 14 feet deep, and his game fight had failed. It had smothered him.

Near Tomah, Wis., a lineman named Schmitz fought a grim battle with a storm that caught him in the middle of his patrol, and after an all night struggle in the snow, with the thermometer at zero and a fearful wind sweeping the wilderness, he crept into Tomah station with both hands and both feet frozen.

Later it developed that a mile from the end of his terrible journey he had discovered a break in the wires between two poles, and although his feet then must have been frozen, he had gone up the pole only to find he needed his coil of wire that he had discarded half a mile back because of the weight.

He patiently climbed back down the pole and retraced his steps, found the coil, returned with it, mended the break, during which work his hands were frozen, and then made his way to Tomah. He was crawling on his hands and knees when he reached it—he was too weak to stand—and he spent three weeks in a hospital. But he had fixed the broken line and kept business going. That is the sort of devotion the fellows who patrol the wires show to the system that employs them.

Harold Harris, a troubleman, was sent up Platte Canon from Littleton, Colo., to locate a cross between the Western Union lines and a telephone circuit. He had located the trouble about one-half mile east of Strontia Springs, and was still on the top of the pole replacing a broken insulator, when there occurred a repetition of a rock slide from which he had had a narrow escape from death the year before. Although the slide occurred within a few feet of him he paid little heed to his own peril, and with his test set he immediately called the manager at the Littleton office, who in turn called the train dispatcher of the Colorado & Southern Railroad at Denver, in time for the dispatcher to telegraph and hold the Colorado & Southern passenger train at South Platte.

The rocks fell across the tracks and were of huge proportions, probably weighing several tons, requiring drilling and blasting to remove. This is but one of the many incidents occurring every day where the telephone saves loss of life and property.

The Duties of an Operator.*

By Nelle C. Ryan.

Operators should report at the rest room five minutes before going on duty. At a given signal, all talking should cease; operators should adjust their sets, form in line, and go at once to operating room. They must enter in a quiet orderly manner.

The chairs should be adjusted for each girl, to give her a comfortable position, allowing the arms free swing over the keyboard. An operator should sit erect with eyes directed to switchboard. In this position, she will be able to handle cords properly and also see the board markings, which are essential for giving good service.

An operator should be courteous and accommodating under all circumstances, answering her calls with a pleasing voice. The operator is the most important factor in giving good service. Why? These are my reasons:

If the equipment is the best, the rules are perfect, and the operator fails to apply herself, what will become of the service?

The operator is the representative of the company who first addresses its patrons, and it is particularly upon her manner and interest that the patron bases his judgment.

The operator serves the public in all of its moods. Therefore it is important that with her courtesy, she be business-like when talking to the subscriber. The subscriber must be pleased because he is paying for his service.

A competent operator will put forth every effort to please all. If a subscriber becomes angry with the operator and she has served him as far as the company's rules provide, then if he is not satisfied, she should refer him to the chief operator without further delay.

An operator should ignore the unpleasant sayings of a subscriber; remember unkind remarks are usually said in haste. A well disciplined operator will under no circumstance, betray the slightest irritation or annoyance. It is well to remember that subscribers do not see the operators to whom they are speaking. All they see is the telephone. Thus they often forget they are talking to a human being.

An operator who is interested in her work will report for duty regularly and on time. Never be absent unless on account of sickness or for some other good reason. Let this be your motto: "Business before pleasure."

When the toll operator takes her position, she should acquaint herself with tickets on hand and reports thereon. This will help her complete her connections without delay. The toll operator should possess the same qualities as the local operator. She should be courteous and accommodating under all circumstances. She should be careful to obtain full information when recording a ticket. Errors and omissions will cause the operator to call the subscriber back, also they cause a waste of circuit time. The operator should monitor on connections at intervals. If the transmission is poor, she should make every effort to locate and remove trouble, by changing cords, service trunks, and even circuits if necessary. In case the patron cannot hear, an accommodating operator will suggest repeating the message.

The originating operator is responsible for supervision on all sent paid calls.

In passing calls through a switching station and the report N. C. is given, the intermediate operator should report to originating operator as soon as possible and at not longer than 15-minute intervals.

Accuracy is essential in giving good service. The operator should use her judgment as to when accuracy or speed are most important. Nervousness and hurry reduce speed.

It is very desirable for an operator to acquire the faculty of doing more than one thing at a time. It is the duty of every operator, local or toll, to do good teamwork.

Every operator should present the best example possible in her work, as the new operator will usually follow the examples set by the older operators.

In taking trouble reports, the chief operator or supervisor should try to locate the trouble. Most of our complaints have a foundation but often the subscriber fails to explain the nature of the trouble, thus causing delay in adjusting complaints.

It would be well to question the subscriber when he is giving a report. By so doing it will enable him to make his wants known and give the chief operator, or supervisior, an opportun-

*Prize paper in a competition conducted by The Mt. Vernon (Ohio) Telephone Co.

ity to explain the reason for the trouble. Thus the subscriber is satisfied and we have obtained full information.

There should be a visiting day for the public. Many people have not the slightest conception of a telephone office. Therefore they cannot appreciate the operator's work.

Central West Texas District Association Organized.

Independent telephone men in the territory surrounding Abilene, Texas, met at Abilene last week and completed the organization of a district telephone association, to be known as the Central West Texas District Association, and to be affiliated with the state organization, the Texas Independent Telephone Association.

A preliminary meeting was held in April at Winters, Texas, where plans were made for permanent organization. W. J. Harrington, of Bradshaw, Texas, is chairman of the association; T. L. Huggins, of Winters, secretary, and R. L. Bates, of Novice, treasurer. The district embraces the counties of Runnels, Coleman, Taylor, Callahan, Brown, Jones, Nolan, Tom Green and Coke.

E. C. Blomeyer, of Waco, Texas, secretary of the state association, delivered an address at the Abilene meeting on the subject of association work. Secretary Huggins, of the district association, spoke on "Organization." Others present made short talks.

The next meeting of the district association will be in Winters, Texas, in July. Among those present at the Abilene meeting were: D. F. Shilling, Buffalo Gap; Luther J. Webb, Hawley; J. L. Simpson, Potosi; W. J. Harrington, Bradshaw; R. C. Barton, Abilene; J. D. Suggs, Wingate; R. E. Dorsey, Norton; R. L. Bates and W. A. Robson, Novice; J. D. Milburn, Dallas; E. C. Blomeyer, Waco; Gus H. Klotz, Abilene; B. Richardson, Baird; W. P. McGuire, Abilene; T. L. Huggins, Winters, and A. A. Marrs, Dallas.

Automatic Telephone Co.. of Nashville., Chartered.

A new Independent telephone company, to be known as the Automatic Telephone Co., of Nashville, Tenn., was recently chartered by the secretary of state. The company purposes to construct and operate an automatic system in Nashville, in competition with the Cumberland Telephone & Telegraph Co., connecting with the various Independent companies in smaller outlying towns.

An ordinance granting a franchise to the company to operate in Nashville was introduced before the city commissioners last week and will come up on first reading in 90 days. The proposed franchise provides that the company shall not at any time charge in excess of the following rates for telephone service: Business telephone $5 per month net; residence, $2.25; two-party line business, $4; party line telephones, business and residence, from $1.50 to $4 per month.

It further provides that the franchise shall be a limited one and shall revert to the city at any time after 40 years that the city may desire to exercise its option to acquire the system; that the company shall pay 3 per cent. of its gross earnings to the city and that the city of Nashville shall reserve the right to regulate its rates and exercise such control over its operation and management as shall be productive of the best results for the citizens of Nashville. Another section of the ordinance provides that the company shall not sell its stock to the Cumberland (Bell) company; neither can the Automatic company buy stock of the Cumberland company. Neither company can make any contract whereby franchises granted to either of the companies can be controlled by one corporation, or organization. In the event that any consolidation with any competing company is made, the franchise of all companies shall be forfeited.

The directors and incorporators of the newly organized company are as follows: Dancy Fort, president of the Independent Telephone Co. at Clarksville; O. J. Porter, general manager of the Independent Telephone Co. at Columbia; G. L. Pentecost, general manager of the Citizens' Telephone Co. at Dickson; C. L. Fisher, general manager of the Automatic Telephone Co. at Jacksonville, Fla.; W. H. Garrett, president of the Home Telephone Co. Lebanon; R. G. Moffitt, general manager of the Home Telephone Co. Murfreesboro, and R. W. Harrison, Litton Hickman and W. E. Steger, all of Nashville.

The company will be represented at Nashville by the law firms of Cherry & Steger and Litton Hickman.

La Crosse Company's Advertising Campaign.

The La Crosse Telephone Co. of La Crosse, Wis., believes in letting the people of La Crosse know about the traffic it handles and the number of operators required to take care of it. Its advertisements in the local papers give the figures for certain days. The papers of June 1 contained the following table just above which was placed in display type the words: "The New Phone operators are answering approximately 40,000 calls a day. Summary of calls answered Saturday, May 29, 1915":

	Number of Completed Connections per Hour.	Average Number of Completed Connections per Hour per Operator.	Number of Local Operators Each Hour.	Number of Long Distance and Supervising Operators Each Hour.	Total Number of Operators Working Each Hour.
7 a. m. to 8 a. m. ...	1371	229	6	2	8
8 a. m. to 9 a. m. ...	2786	214	13	5	18
9 a. m. to 10 a. m. ...	3425	245	14	6	20
10 a. m. to 11 a. m. ...	2852	204	14	6	20
11 a. m. to 12 a. m. ...	2788	214	13	5	18
12 a. m. to 1 p. m. ...	2335	233	10	4	14
1 p. m. to 2 p.m. ...	2860	238	12	4	16
2 p. m. to 3 p. m. ...	2580	235	11	4	15
3 p. m. to 4 p. m. ...	2290	229	10	4	14
4 p. m. to 5 p. m. ...	2348	234	10	4	14
5 p. m. to 6 p. m. ...	2524	212	12	4	16
6 p. m. to 7 p. m. ...	2369	215	11	4	15
7 p. m. to 8 p. m. ...	1903	190	10	4	14
8 p. m. to 9 p. m. ...	1488	201	7	3	10
9 p. m. to 10 p. m. ...	682	136	5	2	7
10 p. m. to 7 a. m. ...	1084	120	2		2

Total number of completed calls for 24 hours.....35,685
Total number of "busy line" calls for 24 hours..... 3,568
Total number of calls for the day.....39,253
Total number of operators on pay roll..... 34

The number of telephones which the company had in service on June 1, the day upon which the table appeared, is given as 5,818.

Ohio State Securities Listed on Stock Exchanges.

The syndicate which purchased and marketed the stock of the Ohio State Telephone Co., of Columbus, Ohio, has been lifted and beginning the early part of last week the stock was listed in the stock exchanges in Columbus, Cleveland, Cincinnati, Toledo and St. Louis.

Since the formation of the company, July 23, 1914, Otis & Co. and George Eustic & Co., syndicate managers, have had charge of the stock and have sold $3,000,000 of the preferred and $900,000 of the common. There are now 1,100 shareholders in the company and 75 per cent. of the stock is held in Ohio.

In spite of the acute condition of affairs due to the European war which broke out shortly after the company was formed, the company has had a rapid growth. It is making extensions to the extent of $2,350,000 and its reports have shown good earnings. For the month of April revenues were $270,842, expenses, $166,443; net income, $104,399; net earnings, $58,359; preferred dividends, $26,087.

For the nine months previous to April 30, the total revenues were $2,338,184; expenses, $1,461,122; net income, $877,061; net earnings $483,361; preferred dividend, $239,231; balance unassigned, $244,129.

Practical Subjects—Letters and Discussions

Public Sentiment, Thoughts and Queries.

"Opinion ultimately governs the world," said President Wilson, in an address given before newspaper editors and publishers, in April of this year.

Query I. What causes public opinion?

Query II. By what means is expression or force given to public opinion?

Query III. Is public opinion in any manner responsible for the governing or misgoverning of the nations which are now at war with each other?

Query IV. Will it be possible to cause a better public opinion for the future? If so, how?

"Lucas took the prize in easy fashion with a total of 12,498 clusters" of tent caterpillars destroyed, says the newspaper of the town of Chelsea, Vt., in describing what it calls one of the most effective and praiseworthy competitions of its knowledge. It was "a training in practical citizenship," says another paper in commenting upon the same matter.

Query I. Was not this a case in which the training in practical citizenship was joined with an effort to influence public sentiment?

Query II. If so, how was public sentiment influenced?

Query III. Have we not here a helpful hint as to a method for influencing public sentiment with regard to other matters—the telephone, for instance?

For many years what is known as the Demarest Declamatory Contests have been used by temperance workers for the purpose of creating sentiment in favor of temperance. Under the direction of temperance workers young people are induced to enter into contests in which temperance pieces are recited before audiences in what is known as "silver medal contests," "gold medal contests" and "diamond medal contests."

One writer has said: "Tell me what is uppermost in the minds of the students of the high schools and colleges and I will tell you what the chief demand of public opinion will be in ten years from now."

Query I. Was this writer correct as to the trend of opinion?

Query II. Have the Demarest Declamatory Contests affected public opinion concerning the liquor question?

Query III. Could opinion relative to telephones be improved?

"The Federal Telephone & Telegraph Co. is pleased to offer three prizes, of $25 each, to be competed for by the pupils in the public and private schools of Buffalo," etc., announced the May 1 issue of the Bulletin of the Federal Telephone & Telegraph Co.

Query I. Will the offering of these prizes affect public sentiment?

Query II. Could other companies follow a similar plan to the mutual advantage of themselves, their patrons and the public generally?

The Interrogator.

Ringing Central on Grounded Party Lines.

I was interested in the query in TELEPHONY of May 29 in regard to trouble in ringing on grounded party lines. While a four-bar generator might be too light for the work, yet I thing that the greatest trouble is generally in the grounds. Most of us have our telephones installed with a galvanized rod driven in the ground and some have been in use for 10 to 15 years. We all know what a poor conductor rust is and yet we never think of the rust that is on those ground rods.

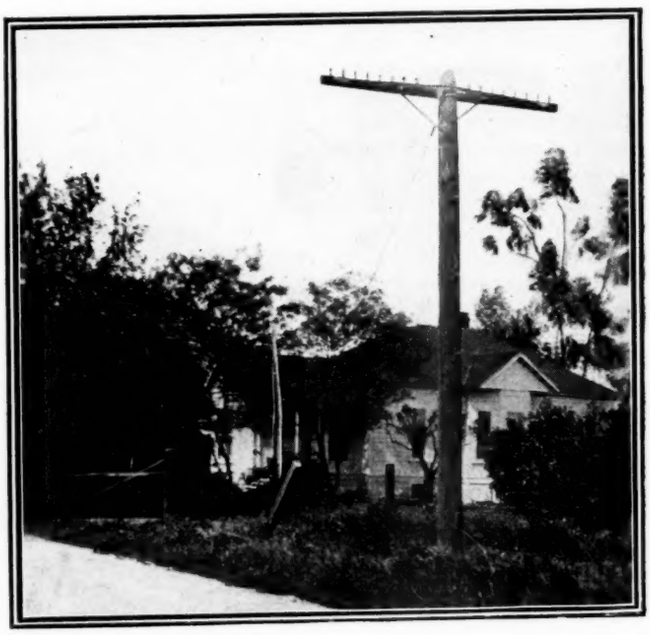
I have found galvanized metallic circuits working satisfactorily even when the two wires were wrapped together for a distance of a hundred feet and so tight I could not separate them with a heavy pole, while if they had been bright the least touch or cross would have shorted the line.

My advice in the case considered in the query would be: Look to your ground. Examine one and see if I am not right in regard to the rust on it.

Blakesburg, Iowa. S. C. Snow.

The Use of 16-Pin Cross Arms in California.

The 16-pin cross arm shown in the accompanying illustration is probably a novelty to many of TELEPHONY's readers. In sending in this photograph, which was taken



Pole with 16-Pin Cross Arm and a Fence Board Pole.

at Oakdale, Cal., Asher Hadley, one of TELEPHONY's subscribers at Spalding, Idaho, states that 16-pin cross arms are in common use in California. Just beyond the anchor-wire guard, in the illustration, is seen a connecting rural line, the "pole" consisting of two boards nailed to a fence post.

Cable Troubles and How to Find Them.*

By Wm. L. McLaughlin.

The cable plant is the most expensive part of a telephone system to install. It is also the most expensive part to repair when in trouble. The materials used in the work are high in price as is the services of a competent cable man. I do not contend that every exchange manager or troubleman will make a cable splicer, but I do think that the greater portion of them, especially in the small exchanges, can by a little study and observance of the remarks contained in this paper, be able to put ordinary cable troubles in at least temporary working condition.

It is the primary object of this paper to point out the various kinds of cable troubles and the methods used to clear them in such a manner as to make it clear to the novice.

In the first place, in order to do cable work, either new or repair, in an intelligent and rapid manner, it is necessary to consider only the individual pair or pairs that are in trouble and not the cable as a whole. The causes of cable trouble are similar to those on open aerial work, only on the open work the pairs or conductors are in plain view at all times, while the cable conductors are bunched in a lead casing or

*Paper presented at annual get-together meeting of employes of the Citizens Telephone Co., of Pekin, Ill.

sheath and obscured from sight. For this reason the man looking for cable faults must see them in his mind's eye.

As the line troubleman when he goes out on a case of trouble, a short for instance, is only concerned in the one particular pair in the lead, so should the cable troubleman only be concerned about the one pair in trouble. Don't let the fact that there are several other pairs in the cable confuse you any more than the other wires in the lead would confuse the lineman.

It has been my experience that not more than 1 per cent. of cable faults will be found at splices, provided of course that the splicing has been done by a competent workman.

A ground on a cable conductor is either caused by dampness or by the conductor coming in contact with the sheath by being burned by some high voltage current or lightning, or by the insulation being ruptured at sharp bends. In common battery and automatic cables a conductor may get crossed with the grounded side of some other working pair, in which case it will show grounded to the wire chief's voltmeter.

A "short" cable pair is the same as a "short" line pair. Shorts are usually caused by being burned by some high power current or lightning. Opens or broken conductors are generally from the same source.

High resistance troubles are generally caused by dampness entering some ruptured place in the cable and sometimes by slight burns. I have also found them caused by bullets being shot into the cable, the bullet rupturing the insulation but closing the sheath in such a manner as to permit no moisture to enter. Faults of this nature are the most distressing a cable man has to contend with, and will surely put more gray hairs in his head than any other source of trouble. These are the cases that generally come and go; that are clear one day and in trouble the next.

Crystalization and electrolysis of cable sheaths are two types of faults which may be properly taken up under the head of high resistance troubles, as these troubles, when they first appear, are similar in nature. Crystalization should not be confused with electrolysis or vice versa. Crystalization is always caused mechanically and never electrically. It will be most frequently found in cables suspended with marlin hangers and, to a marked degree, when the hangers are too long, allowing the cable to swing too far from the messenger strand.

Experience has taught me that the nearer and firmer a cable can be placed to the supporting strand, the less liable it is to crystalization. Crystalization is either caused by vibration or by cable creeping, owing to expansion and contraction due to temperature changes. This trouble seldom appears in a cable less than seven or eight years old, unless the conditions causing it are extremely bad.

In my opinion a great error is made by most construction men when turning corners with a cable in lashing it tightly at this point. I contend there should be some slack left, say six inches, and it should be tied as loosely as possible. This will compensate for the creeping, previous mentioned, and trouble will thereby be avoided.

Electrolysis is rare in aerial cables although it is sometimes found where bonds are not made electrically secure. Trouble of this nature is very often found in underground cables and is usually caused by poor bonding of the street railway rails. The rail being one side of the street railway circuit, it is obvious that if the bonding is poor the return current will seek the path of lowest resistance. There is no danger where the current leaves the rail to go to the cable, but it is where it leaves the cable to return to the rail that the mischief takes place. There is an electrochemical action set up which, if not remedied, will eventually so corrode the sheath as to give it a honeycombed appearance and admit moisture.

I have classified the various cable faults that have come under my observation and will now cite some of the simpler methods of locating them.

The magnetic or wireless cable tester is used at this time more than any other cable testing set, owing to its simplicity of operation and low cost. This instrument is purely magnetic in character and operation. The test set and conductors under test act as the primaries of an induction coil while the exploring coil and receiver act as the secondaries. The lines of magnetic force set up by the test set are cut by the exploring coil when placed near the sheath. The current put out by the test set, being of an intermittent or pulsating nature, is of course then perceptible in the receiver.

A set of instructions is sent by the manufacturer with each set and, if closely followed, will give good results. On shorts and grounds, also very wet spots, these sets work to excellent advantage. But in cases of high resistance, such as just merely dampness, it will seldom locate the trouble to any degree of exactness. When a set of this nature is not available a home-made one may sometimes be devised. I have used an old automobile coil, also the ringing current from a motor generator to a good advantage. An old style Stromberg-Carlson receiver, the old No. 3 type with the coils in multiple, makes a good exploring coil with the car cap and diaphragm removed.

If neither of these articles are available, a slide wire bridge can always be quickly made around almost any exchange, by taking an ordinary yardstick and stretching a piece of wire of a low temperature co-efficient. German silver or manganin wire is excellent, or if this is not at hand a piece of No. 22 gage copper wire answers very well.

A binding post should be placed just over each end of the yardstick so there is exactly 36 inches of wire between the posts. Attach the faulty wire to the binding post at the counting end of the stick and another clear wire in the same cable to the post on the other end. These wires must then be bridged together at the outer end of the cable. A head receiver should now be bridged across the two binding posts.

In case of a ground, four or five cells should be set up with the negative side grounded. Take a wire and feel along the slide wire until a point of silence is found. This point will appear somewhere between the faulty wire post and 18.

The following formula will give the distance in feet from bridge to fault:

2 x lengths of cable x point of silence divided by 36.

This is a simplified application of the Wheatstone bridge and is based on two fundamental laws: 1. No current will flow between points of like potential. 2. The fall of potential along the various parts of a conductor is proportional to the resistance of those parts.

Keeping these two rules in mind, you can see that no current will flow in the receiver when the bridge is balanced. Hence the theory of its operation is:

The resistance of the slide wire between post 1, or where faulty wire is attached, and the point of silence, bears the same relation to the resistance of the slide wire between the point of silence and post 2, or where the good wire is attached, as the resistance of the faulty wire from post 1 to the fault bears to the resistance of the faulty wire beyond the fault, plus the resistance of the good wire. Since the resistance of uniform wires, such as cable conductors, is proportional to their length, the formula becomes as previously stated.

This test may be applied to shorts by either grounding the mate of the short pair or proceeding as in case of a ground or connecting it to the battery.

There are some very reliable tests for opens but as these are made with a Wheatstone bridge, they are too extensive of explanation for this paper.

A reliable test for wet cable using a head telephone and batteries, is as follows:

Bunch the wet pairs and connect to one side of a set of four or five dry cells. Connect the other side of the battery to the messenger. There is now a battery circuit established through the pairs in trouble by the fault to the messenger. If the sheath is now thoroughly insulated from the messenger,

there should be a battery click in the receiver when applied across the sheath and the messenger. Then by ringing the sheath with a jack knife, it can be broken in sections and the troubled section located.

This test can only be applied when it is possible to insulate the sheath from ground, but as most cables are hung with marlin hangers, it is possible in most cases. It is very valuable in cases of high resistance wet spots, such as crystalized sheath or small pin holes, but should only be applied as a last resort on account of having to cut the cable at so many points.

An electrolytic survey should be made of an underground plant where there is a street railway system. This can be done by means of a milli-voltmeter, preferably one with a center zero, as with an instrument of this type, the positive and negative flow of current can be detected without changing connections.

The cable should be tested at every manhole by placing one side of the milli-voltmeter in connection with the rail neighboring water and gas pipes, noting the direction of deflection. When the deflection becomes positive, note the manhole where the highest reading is made. The cable should then be grounded to the rail or to a buried ground of large surface. If this does not relieve the trouble, then a return bond will have to be run to the generator at the power house.

The wiped joint is the bugaboo of the cable worker. It is, however, very simple if a little time, patience and a few burned fingers are not too big a price.

The first thing is to get the joint in proper shape to be wiped —that is, have all parts scraped perfectly clean, both on the cable sheath and sleeve. After this is done apply candle grease or any clean tallow. Put on a paper plaster to limit the length of the joint.

Next get the solder ready. Therein lies the secret of wiping joints, for unless the solder is properly proportioned as to lead and tin, the best mechanic cannot make a good job. The proper proportions are 60 per cent. lead and 40 per cent. tin. This can be determined fairly accurately by the eye. If using half and half solder, heat the solder until it will char a piece of dry paper. Then using a dry brick or the cement walk, if nothing else is available, pour out enough solder to make a piece about the size of a dollar when cold. When it gets cold the solder will be covered with spots of gray and bright silver. The gray is the lead and the silver the tin. Then add enough lead sleeving to make the gray spots predominant, about 6 to 4, and the right mixture is obtained. The actual operation of wiping the joint must be attained by practice. Only remember in pouring the solder to spread over the joint, to work the bottom to the top until the joint is equally hot at all points. It is then ready to wipe.

It is my opinion if the foregoing remarks are followed, the average telephone man can make a great many of his cable repairs.

Testing Line Fuses.

Having seen a number of fuse testers advertised, I thought it might be of interest to some to know that fuses can be tested more satisfactorily with a receiver. The headband receiver is the better kind to use. It should be equipped with a cord of sufficient length, having tips. Place the tips to the fuse terminals. If it is good, you will not hear any sound; but if blown, you will get the inductive disturbances that are always on the line.

M. M. Collier, Secretary.
Prairie Grove, Ark. Prairie Grove Telephone Co.

Current Through Galvanometer in Wheatstone Bridge.

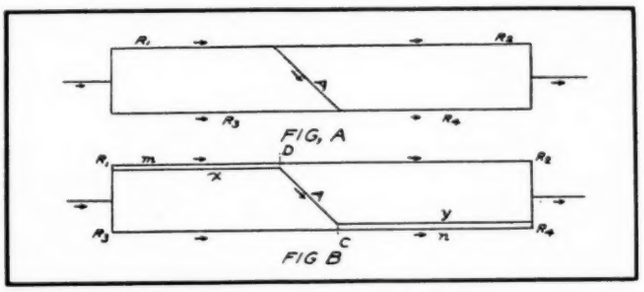
The usual formulas for currents in divided circuits are not applicable when the branches are arranged as in Fig. *A*, which is essentially a Wheatstone bridge diagram. The following method was devised to determine the current flowing through the galvanometer or resistance *A*. It also affords a simple means of determining the galvanometer constant when measuring high resistances by the direct deflection method.

Assume the branches, R_1 and R_4, each to be split into two equivalent resistances (Fig. *B*), then

$$R_1 = \frac{mx}{m+x} \quad \ldots\ldots (1)$$

$$R_4 = \frac{ny}{n+y} \quad \ldots\ldots (2)$$

We now have three resistances in parallel: $m+R_2$, $x+A+y$, and R_3+n, the joint resistance of which equals that of the original circuit. By the conditions of the circuit, there can be no difference of potential between m and x at any point, as *D;* or between n and y at any point, as *C*. Therefore



Galvanometer Circuit Conditions.

$$\frac{m}{x} = \frac{R_2}{A+y} \quad \ldots\ldots (3)$$

$$\frac{n}{y} = \frac{R_3}{A+y} \quad \ldots\ldots (4)$$

Solving these equations:

$$x = \frac{R_1[R_4(A+R_3)+R_3(A+R_2)]}{R_2R_3-R_1R_4} \quad \ldots\ldots (5)$$

$$y = \frac{R_4[R_1(A+R_2)+R_2(A+R_3)]}{R_2R_3-R_1R_4} \quad \ldots\ldots (6)$$

From equation (1):

$$m = \frac{R_1x}{x-R_1} \quad \ldots\ldots (7)$$

From equation (2):

$$n = \frac{R_4y}{y-R_4} \quad \ldots\ldots (8)$$

When the bridge is balanced, the term: $R_2R_3-R_1R_4=0$. Whence x=infinity, which is true since no current flows through the galvanometer.

Let the effective resistance of the galvanometer circuit, $x+A+y=Rx$, and let $R_1=1$; $R_3=10$; $R_2=100$; and $R_4=999$.

Then if $A=$ 1, $Rx=$ 1,211,798.
Then if $A=$ 10, $Rx=$ 2,127,980.
Then if $A=$ 100, $Rx=$ 11,300,790.
Then if $A=$1,000, $Rx=$103,018,890.

Thus, the galvanometer constant may be obtained without using a standard high resistance.

Knowing Rx, the current through the galvanometer is readily found for any given voltage.

Spokane, Wash. Robt. T. Creel.

The Distinctive Touch of Individuality in Business

The Telephone Business Supplies Excellent Opportunities for Cultivation of Qualities Which Elbert Hubbard Declared Essential to Make a Man an Artist in His Work—Some Stories Related in The Bulletin of the Federal Telephone & Telegraph Co.

By John D. Wells

BUSINESS MEN.

Most anybody can do business fairly well. Many men can do business very well; a few can do business superbly well. But the Man who not only does his work superbly well but adds to it a touch of personality through great zeal, patience and persistence, making it peculiar, unique, individual, distinct and unforgetable, is an artist. And this applies to all and every field of human endeavor—managing a hotel, a bank, a factory, a railroad—writing, speaking, modeling, painting. It is that last indefinable touch that counts: the last three seconds he knocks off the record that proves the man a genius—From "The Fra."

So-called "Business Philosophy," peddled right and left in every magazine these days, is pretty generally "bunk," I believe. It is generally written for the guidance of others by men who have not made a success of things themselves. This, on the face of it, makes an absurdity.

Every once in a while, though, some man writes something on business and how to win success, that shows a touch of genius. Some of these efforts are "meaty" and seem to embody all the principles of business achievement.

Especially do I want to commend the foregoing gem, by Elbert Hubbard and published originally in "The Fra." Every once in a while Elbert says a thing so much better than anybody else can say it, that it's worth preserving.

Study this gem for a few moments and see what relation it has to your present job. We have studied with the same thought in mind and believe it has been helpful to us.

Let's analyze it.

It is a fact that almost anybody can do business fairly well. Look about you and locate, in your mental vision, the men you know who "do business fairly well." Are they thriving, are they better conditioned today than they were a year ago today, or two years ago? No. That's because they do business "fairly well."

It is also a fact that many men can do business very well. You will see them on the streets, in the hotels and clubs every day—thousands of them, who bear the air of prosperity, are popular with others, yet are not accorded the deference that seemingly their station in life commands. Something is lacking. They are of the host of men who do business "very well."

It is equally true that a few men do business superbly well. Look about you and see them. They are the men who command fortunes, who figure big in the financing of great plans, who are known as forceful characters along business lines and capable of great achievement. Yet, something is lacking.

Now we come to the real knight of the business world, the man who not only does his work superbly well but adds to it a touch of personality through zeal, persistence and patience. He makes his work peculiar, unique, individual, distinct and unforgetable. He is an artist and the peer of others in the business world.

Now this doesn't mean that the formula applies only to men who are engaged in big business and confine their work to brokerage or banking. It applies to the telephone business or newspaper business with equal propriety.

I have in mind now a young chap who took a "star reporter's" position on a paper with the staff of which I was once connected. We used to spoof him considerable because he used to get to work an hour before the rest of us and spend that time in dusting the desks and polishing the type machines because he wanted too. We used to think it was awfully funny and hard to understand.

I am reminded of this fellow and the things he used to do because here on my desk before me I have a beautifully engraved invitation to attend a dinner at our National Press Club in Washington to be in the nature of a farewell to Billy Thomas who leaves the newspaper profession to take up the important duty of diplomatic and publicity representative of the United States steel trust. You see, Billy Thomas made his work unique. And when he gets on his new job I wouldn't be a bit surprised to see Billy at the office an hour early, polishing the type machines and dusting the desks. It's because Billy is in the habit of adding a touch of personality to his work and making it distinctive and unforgetable.

We have a lot of men in the Federal company who have just that little touch of personality that they add to their work. That's one reason why the Federal is more prosperous today than it has ever been before; that's why its securities are selling rapidly among people who know good investments and why the sky of the future is all lighted up with assurance of success. People know we have such men and are willing to trust their affairs to them.

We have them out in the exchanges, too; men who add that indefinable little touch that makes their work different. I can prove that by some information that came to my desk the other morning from one of the leading citizens of Silver Creek. George King is our manager there. He is a good live wire who has turned several tricks that are very much worth while. Angola is in his territory. The other day on one of the rural lines a farmer became enraged when service was interrupted, and followed an inclination that has many times tempted all of us. He went to the woodshed and got his axe, returned and chopped the telephone into a million pieces.

"When I reached the place," said King to the man who informed us, "I looked at that pitiful little heap of debris on the floor and honestly I saw a dozen things I never knew were in a telephone!"

Our exchange manager quickly surveyed the possibilities and concluded that the most diplomatic thing to do would be to sympathize with the farmer, which he did, and thoroughly damned the Federal and all its offshoots.

"Afterwards when things had died out," said King in relating the story to our informant, "I really spent a lot of time ascertaining why he had experienced such bad service. He liked the attention; he saw an honest effort to help him and his first acknowledgment of it was when he gave me $15 for a new telephone. Then he paid me three months' rent in advance. When he got good and over his mad spell I visited him again, and impressed him with the effort the company makes to maintain agreeable relations and superior service. He began to like us so well

that he took two shares of stock. I don't know; maybe he'll take some more."

What was the net result of this tactful handling of a disagreeable situation? Let's summarize it.

I. We made a friend.
II. Made $5 net on the first cost of the telephone.
III. Saved a subscriber.
IV. Made a personal friend for King.
V. Sold two shares of stock.

Fellows, that's the touch of personality that Elbert talks about—the indefinable touch of something that makes a man's work unique, individual, distinctive and unforgetable.

Let's all cultivate it.

Program for Telegraph Superintendents' Convention.

At a meeting held last week in Rochester, N. Y., the committee on arrangements completed the plans for the convention of the Association of Railway Telegraph Superintendents, to be held in that city June 22, 23, 24 and 25. Included in the program is a paper by John J. Carty, chief engineer of the American Telephone & Telegraph Co., New York, the subject to be announced later. M. H. Clapp, superintendent of telegraph, Northern Pacific Railroad, St. Paul, Minn., will lead in a discussion of the paper.

"Interference from Single-Phase, High-Tension Power Lines" is the title of a paper to be presented by N. E. Smith, superintendent of telegraph, New York, New Haven & Hartford Railroad, New Haven, Conn. The subject will be discussed by J. C. Johnson, superintendent of telegraph, Pennsylvania Railroad, Philadelphia; G. A. Cellar, superintendent of telegraph, Pennsylvania Lines West of Pittsburgh, and S. L. VanAkin, assistant superintendent of telegraph, New York Central & Hudson River Railroad, Syracuse, N. Y.

G. A. Nelson, of the Gordon Primary Battery Co., New York, and E. E. Hudson, sales manager of Thomas A. Edison, Inc., will speak on the subject of "Primary Batteries for Transmitter Purposes on Train and other Telegraph Lines vs. Dry Batteries." W. E. Harkness, New York, and C. S. Pflasterer, of the National Carbon Co., Cleveland, Ohio, will lead in the discussion.

A paper on "Censorship of Messages" will be presented by W. H. Hall, superintendent of telegraph, Missouri, Kansas & Texas Railroad, Denison, Texas. The subject will be discussed by H. D. Teed, superintendent of telegraph, St. Louis & San Francisco Railroad, Springfield, Mo., and J. F. Caskey, superintendent of telegraph, Lehigh Valley Railroad, South Bethlehem, Pa.

Telescribe Adapted for Use on Transcontinental Line.

Thomas A. Edison, at the age of 68, announces the perfection of the telescribe, a combination by which a telephonic conversation can be perfectly recorded on a wax record. Its completion gives Mr. Edison the credit for more than 1,500 inventions and more patents than ever have been issued to any other individual.

With the telescribe "canned evidence" of a litigant's own words in his own voice may be heard by a jury. The telescribe consists of a sensitive telephone for desk use with controlling buttons to operate a recording machine near by. It is so sensitive and so adjusted that the slightest vibration is recorded. It is now stated that the instrument may be successfully used on long distance lines, even on the recently opened transcontinental line.

When he invented the carbon telephone transmitter and the phonograph, 38 years ago, Mr. Edison conceived the idea of the telescribe. More than a generation of invention and scientific development is centered in the new apparatus, which Mr. Edison says "the world will soon recognize as a great commercial asset. It makes the telephone more useful, the phonograph more valuable, and both more necessary."

After the words of the telephoning person are recorded, the wax record, if important enough, may be preserved, or it may be used 100 times if the intelligence on it is taken by a typist and the record "shaved."

Long Distance Connections Over Postal Lines.

The Independent telephone companies of the South have completed arrangements with the Postal Telegraph-Cable Co. for the use of its wires to establish long distance connections throughout the Southern states in competition with the American Telephone & Telegraph Co.

According to the plans made public recently, the Memphis Telephone Co. will establish service between Memphis, Tenn., and Dallas, Texas; the Home Telephone Co., of Cairo, Ill., will arrange for circuits between St. Louis and Memphis and to Louisville, Ky.; the Atlanta Telephone Co. will control circuits from Atlanta to Memphis and Birmingham and Montgomery, Ala., and the Home Telephone Co., of Mobile, from that city to Memphis and Hattiesburg, Meridian and Yazoo City, Miss.

State Control of Texas Telephone Rates Is Sought.

A resolution requesting Governor Ferguson to submit to the legislature during the present called session the subject of state control of telephone and telegraph rates was recently adopted by the Texas Grain Dealers' Association.

The resolution sets forth that the cancellation of telephone coupon books in 1907 had the effect of increasing the rate 33 1-3 per cent.; that cancellation of all night rates in 1914 resulted in an increase in some cases as high as 300 per cent., and that at the same time day rates were increased about 50 per cent., making a total average increase of about 100 per cent., and thus placing a heavy burden on nearly every line of business, and especially on dealers handling the farm products of that state.

Reduction Ordered in Kansas Toll Rates.

A 20 per cent. reduction in toll rates over the telephone lines between Elkhart and Rolla, Rolla and Hugoton, and Elkhart and Hugoton, was recently ordered by the Kansas Public Utilities Commission, following a hearing at Dodge City. A readjustment of the division of toll revenues among the companies was also ordered. The minimum rate for telephone calls between Elkhart and Hugoton was reduced from 50 to 40 cents, and between these two points and Rolla from 25 cents to 20 cents.

Oklahoma Telephone Case Remanded to the Commission.

The case of the Pioneer Telephone & Telegraph Co., against the Jefferson County Telephone Co., appealed to the supreme court from the corporation commission, has been remanded to the commission with directions to take additional evidence and determine a proper rate to be paid by the appellant company in the interchange of business with the other company at interest.

Vacuum Cleaners Installed in London Telephone Exchanges.

That the vacuum cleaner is meeting with favor in the telephone exchange is evidenced by the fact that recently 30 portable electrically driven vacuum cleaners were installed in the London exchanges. The successful application of vacuum cleaners for the cleaning of telephone exchange equipment is largely a question of the design of suitable tools. The tools at present supplied are mostly experimental but it is intended that a standard set shall be evolved when sufficient experience has been gained.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities and Actions of City Councils Bearing Upon Franchises, Rates and Service

Paducah, Ky., Home Company Protests Bell Franchise.

Though the city of Paducah, Ky., and the East Tennessee (Bell) Telephone & Telegraph Co. have compromised their difference after years of litigation, all is not smooth sailing yet and the franchise which has been drawn up by the city for sale to the East Tennessee company at $500 is likely to meet with opposition when it comes up for final reading before the city commission.

H. J. Jeffery, district manager of the Central Home Telephone & Telegraph Co. and of the Paducah Home company, appeared before the commission to protest against the rates provided in the franchise. The Paducah Home is required by the franchise under which it is operating to supply private residence lines at $1.50 a month and business lines at $2.50, while the new franchise provides that the East Tennessee may not exceed a maximum rate of $1.50 for residence lines and $4 for business lines, no change from the present rate to be made for a year. Now the residence rate of the East Tennessee is $1 net, 25 cents discount being given on bills paid before the 10th of the month.

Mr. Jeffery's contention is that as long as the Paducah Home is compelled to charge a stated rate, the East Tennessee should not be permitted to come in under favorable auspices and cut the price below cost of service to a figure which only the resources back of the East Tennessee company make it possible to maintain, for on that basis any isolated company would be bound to fail. Manager L. L. Billups told the commissioners that the East Tennessee officials had no objection to the Paducah Home meeting its rates. At that, even if the commission does not honor the Paducah Home's contention, the $2.50 business line service offers a fairly satisfactory offset to the East Tennessee company's lower residence rate and the Paducah Home will not give up the fight easily.

The Jury Awarded Damages in this Case.

After a deliberation of more than ten hours the jury in the case of Mrs. W. H. Adkinson vs. the Southern Telephone & Construction Co. of Tallahassee, Fla., on May 15, brought in a verdict awarding damages to the extent of $7,500 to the plaintiff for the wrongful death of her husband. His death, it was alleged, was caused by a bolt of lightning striking the telephone wire and flowing from thence through the telephone into the body of W. H. Adkinson while he was engaged or about to become engaged in using the telephone, because of the negligence of the telephone company to install a ground wire to the lightning arrester.

The case was long and hard fought lasting for more than two days. Attorneys W. C. Hodges and J. A. Edmondson represented the plaintiff, while W. J. Oven and Neely & Davis represented the defendant company. Expert testimony was given on both sides during the course of the trial.

The telephone company claimed that the lightning did not pass through the telephone as it was proved that it was in perfect working condition when brought to the office and tested in the presence of several disinterested parties. The experts all testified that lightning of sufficient voltage to have killed a man and knocked another to his knees 20 feet away from the telephone, could not have passed through the telephone without leaving its marks; and also that if it did go over the telephone wire there was no device known to mankind that could have stopped it. It was the contention of the telephone company that he was either killed by a direct bolt of lightning, that is, it was an act of God and man could not be held responsible, or the current jumped from the telephone wire to the city electric light company's wire, which in violation of the city ordinance was only seven inches below the telephone wire, and flowed into the building on the electric light wire and jumped from thence into the body of Mr. Adkinson, as he was standing about two feet from an electric light. The telephone wire going into the building had no physical connection with the wires on the telephone pole just north of the building, that was struck and a part of a cross arm knocked off, but came in from the south. Where the telephone and electric light wires entered the building, they were only about an inch apart, and as the telephone wires were installed first, the electric light company was to blame for the incorrect installation. At this point the current probably jumped back and forth several times for it was proved that the current was on the electric light wires at one time, as all the fuses were blown.

The telephone company immediately gave notice that a new trial would be requested.

Order Restraining Butte, Mont., Merger Withdrawn.

Obstacles placed in the way of the telephone merger in Butte, Mont., several weeks ago by suits started to restrain officials of the Mountain States Telephone & Telegraph Co., were recently removed when attorneys on both sides stipulated that a judgment for the defendants might be entered in the cases of Patrick Wall and Patrick McCarthy against the Montana Independent Telephone Co., T. S. Lane and others. Judge J. J. Lynch issued an order to that effect and a temporary order restraining the Mountain States company from removing the automatic telephones and to complete the merger was withdrawn.

In his complaint Mr. Wall alleged that the merger was contrary to the Montana state constitution. He asked that the Mountain States company be prohibited from completing the merger and that a receiver be appointed for the Montana Independent Telephone Co. to take charge of and operate the Independent system.

Action Delayed on Chicago Franchise Ordinance.

No action was taken at the meeting of the city council early this week regarding the measure to forfeit the automatic telephone plant in Chicago, as the ordinance was not ready for presentation. A week ago the council, receiving Mayor Thompson's veto of its forfeiture ordinance, amended it so that it directed Corporation Counsel Folsom to submit at this meeting of the council an ordinance covering the subject of the forfeiture. An order was passed directing the corporation counsel to furnish each alderman with a copy of the ordinance two days before the next regular meeting of the council, or by June 12.

Ordinance to Eliminate Guy Wires Protested.

Representatives of the telephone companies at Youngstown, Ohio, recently appeared before the city council protesting against the proposed ordinance to eliminate guy wires. It is contended that the ordinance is entirely too drastic in its provisions and will work a considerable hardship on them.

It provides that all guy wires or stay wires, within the limits of any public street, sidewalk or other public place, nearer to the earth's surface than 12 feet, shall be removed. Such wires are characterized as dangerous to the public

safety. The measure empowers the director of service to summarily cut down the wires if the owners do not do so within ten days after a notice to this effect is received.

The telephone representatives claim the ordinance will not only work a hardship on them but will create another alternative which will be just as bad. They aver the overhead wires cannot be supported as firmly by connecting them with a pole 12 feet high as by extending them to the ground and that there will be great danger in winter, when the wires are covered with sleet and snow.

Inequitable Distribution of Tolls by Pioneer Company.

Following some agitation of the Oklahoma Independent Telephone Association, the Pioneer (Bell) Telephone & Telegraph Co. in January instituted a new form of commission basis, which it proposed to make general over the state. Under the new plan it was to give 3½ cents for each in-call, regardless of its distance or time, and 2½ cents each plus 10 per cent. on all out-calls, regardless of time or distance, no commission in either case to be paid on "in" overtime. This figured an average of about 15 per cent. on all in and out business. This plan was rejected by the association, upon which five cases were selected as test cases.

The five cases were set for hearing before the commission May 27, at which time a great deal of evidence was produced. As it took nearly three days to hear evidence in the Afton and Magnum cases, the others were postponed for later hearing. However, the Pioneer (Bell) claimed that the case of the Comanche line was strictly new to it and it would necessarily take them time to prepare an answer. The commission allowed the Afton and Mangum cases to remain open till June 22, and at that time to continue the hearing, when the Pioneer company will be expected to present its arguments.

Making the State Commissions Constitutional Bodies.

Seymour Van Santvoord, chairman of the New York Public Service Commission, appeared before the public utilities committee of the Constitutional Convention last week, advocating that the public service commissions be made constitutional bodies and that the office be surrounded with all the safeguards afforded justices of the Supreme court.

"There is no department of the state government in which personal integrity and moral courage are so necessary as in the public service commissions," Mr. Van Santvoord told the committee. "You have no idea of the diverse ways in which it is sometimes tried to exert a personal or a political influence on the members of these tribunals. Its members should be protected in every possible way against this. Their terms of office, their power and duties, their method of removal, and perhaps their salaries should be fixed in the constitution. The salaries should be large enough and the office so secure and honorable that no member could be tempted to act otherwise than in the public interest."

"I am against the inclusion of the bi-partisan idea in the statute," Mr. Van Santvoord said in answer to a question. "Automatically this injects politics into the commission. Ordinarily these commissions are non-partisan if left alone. Their members are not political men. Through all the time I have been on this commission I have never heard a matter of politics discussed. Why throw this bomb shell of partisanship into the commission?"

Mr. Van Santvoord expressed himself in favor of a court review of the commission's decisions and in favor of the removal from the legislature of the power to regulate rates by enactment.

"It has been the aim of this commission to establish such relations with the corporations that they may be convinced of the fairness of any decision of the commission, but, should any corporation believe that the commission has not acted justly, it should have the right to a review in the courts," he said. "The public service commissions are tribunals where litigants can come formally or informally, but they should not be denied the right to a formal review.

"There never has been a legislature since the enactment of the law in 1907," Mr. Van Santvoord said, of the legislature's making rates, "which has not passed some act to arbitrarily set rates. Likewise, every governor has vetoed all such legislation on the ground that the matter is under the jurisdiction of the commissions under the general law. The legislature should be forbidden by the constitution to make rates. Corporations and individuals should feel that they do not have to 'tend their fences' in the legislature in order to secure justice in the matter of rates."

Mr. Van Santvoord praised the enactment of the Thompson "jitney bus" bill.

"It is not 'aimed at the jitney bus'," he said, "it merely carries out the basic idea of the public service commission law that while public utilities are regulated they will also be protected from improper competition. The state requires of traction companies certain things in capitalization and in equipment for the public convenience and safety. It is only fair that the same or similar requirements be placed on competing carriers."

Short-Term Rates Filed by New England Company.

The New England Telephone & Telegraph Co. has filed with the New Hampshire Public Service Commission a schedule of short-term telephone rates in accordance with the provisions of an act passed at the last legislative session. This act repealed the short-term telephone-rate statute of 1909, but provided that every telephone company in the state should establish rates for terms of 3 to 11 months, such rates to be subject to the jurisdiction of the commission and open to investigation and revision, upon petition, the same as other utility rates.

Under the New England schedule filed, the rate for any term less than a year is made a proportionate part of the yearly rate, plus an "adjustment charge," the charge being made to diminish from month to month till the end of the eleventh month. If the service continues 12 months the charge entirely disappears and the annual rate applies.

The adjustment charge varies according to the exchange of the subscriber. Under the standard charge $11 is added to the proportion of the yearly rate in the case of service for one month, and this addition diminishes at the rate of $1 per month, becoming only $1 in the case of an 11 months' term.

Upon all exchanges in the state, however, except summer exchanges, a lower charge is allowed to subscribers within a radius of one mile from the exchange. The company proposes to put the new rates in effect June 12.

Agitation in Minnesota Over Raise in Toll Rates.

Considerable agitation has been aroused in Minnesota over the new toll rates placed into effect the early part of last month by the Northwestern Telephone Exchange Co. Some of the rates have been increased as high as 60 per cent. and the talking period reduced.

The company has declined to make public announcement of the new rates, stating that the rates have merely been readjusted and that an attempt has been made to put them on a mileage basis.

The traffic division of the Civic & Commerce Association of Minneapolis, has decided to institute an investigation into the toll rate situation.

Indiana Telephone Property Shows Increase in Valuation.

According to the State Tax Commission of Indiana the aggregate valuations of telephone properties in Indiana for taxation purposes have increased from $15,840,115 to $17,101,547 this year.

Withdraws Recommendation for Metered Service.

The California Railroad Commission has filed a supplemental report with the Los Angeles city council, withdrawing its previous recommendation for measured service for business telephones, beginning January 1, 1916.

The commission recommends that the telephone rates now being charged by the telephone companies be continued in the city proper and that the rates charged in the San Fernando Valley and Palms district before annexation to Los Angeles also be continued during the coming fiscal year.

Iowa Long Distance Rates Increased.

The Iowa Telephone Co. has made an increase in its rates for long distance telephone service throughout the entire state. The regular three-minute period charge has been increased 13.3 per cent. The cost per minute for overtime has been increased in some instances 100 per cent. In the majority of cases, the increase in this overtime charge has been raised 50 to 75 per cent.

Toll Rates of Tri-State Company Increased.

The Tri-State Telephone & Telegraph Co., of St. Paul, Minn., recently announced a general increase in its toll rates. The increase became effective June 1 and averages about five cents a call. In a few cases the toll rate has been decreased and the minimum talking periods adjusted.

Summary of State Commission Hearings and Rulings.

ARIZONA.

May: The commission has granted the application of B. Woods, et al., for permission to transfer the Navajo-Apache Telephone System, of Holbrook, Ariz., to the Arizona Electric-Telephone Co. The new company was also granted permission to issue 24,985 shares of stock at $1 per share.

CALIFORNIA.

May 5: The commission granted the application of the Southwestern Home Telephone Co., of Redlands, Cal., for permission to issue promissory notes of the face value of $14,500 and to pledge as collateral security its bonds of the face value of $29,000.

May 10: Home Telephone & Telegraph Co., of Santa Barbara, Cal., authorized to renew a promissory note in the sum of $10,000.

May 21: Application filed by the Sacramento Valley Telephone Co., of Sacramento, Cal., for authority to purchase the properties of the Glenn County Telephone Co., the Tehama County Telephone Co. and also certain properties of the Pacific Telephone & Telegraph Co. in Glenn and Tehama counties. Permission is also asked by the company to incur a bonded indebtedness equal to the full amount of its capitalization, which is $500,000. The company proposes to sell $125,000 of stock to the Pacific company for cash and to pay the Pacific company $65,000 in stock and $165,000 in bonds for its property. The price to be paid to the Glenn County company is $68,000 cash, $13,000 in bonds and $2,000 in stock, while the Tehama County company is to receive $43,500 cash, $12,000 in bonds and $15,000 in stock for its property.

ILLINOIS.

June 1: Hearing on application of the receivers of the Central Union Telephone Co. and the Central Illinois Telephone & Telegraph Co., of Lincoln, Ill., for approval of an intercorporate contract between the companies for the interchange of traffic at Lincoln and various other points.

June 1: Hearing on application of the Keyesport (Ill.) Telephone Co. for authority to change rates of subscribers who own their telephones and subscribers who rent their telephones.

June 1: Hearing on application of the Farmers' Mutual Telephone Association, of Grayville, Ill., and the Crossville (Ill.) Telephone System for approval of contract for interchange of service.

June 2: Hearing on application of the Bruce (Ill.) Mutual Telephone Co. for authority to change rates to stockholders.

June 2: Hearing on application of the Avon (Ill.) Mutual Telephone Co. for authority to change rates on all rural lines entering the central exchange at Avon and vicinity.

INDIANA.

May: Petition filed by the Southern Indiana Telephone Co., of Evansville, Ind., for permission to increase its rates from the minimum to the maximum in New Albany, Princeton, Boonville and some other towns in southern Indiana for the purpose of equalizing the rates. Hearings will be held June 15 at Boonville, June 16 at Evansville and June 17 at Jeffersonville.

KANSAS.

May 26: The commission ordered a 20 per cent. reduction in toll rates bteween Elkhart and Rolla, Rolla and Hugoton and Elkhart and Hugoton.

MISSOURI.

May: The commission has vacated the order issued January 20 suspending the revised rates and terms of service filed by the Cape Girardeau Bell Telephone Co., of Cape Girardeau, Mo., pending an investigation as to their reasonableness. After making a thorough investigation the commission ordered that the suspension order be vacated, effective June 1.

June 1: Hearing on application of the Home Telephone Co., of Joplin, Mo., for a permanent increase in rates. A temporary increase was allowed several months ago. Since then a valuation of the company's physical properties has been made by the commission in an effort to ascertain whether or not the increase is justified.

NEBRASKA.

May 20: Hearing on application of the Lincoln Telephone & Telegraph Co. for permission to increase its rates at Friend, Neb. The increase asked for is from 25 to 50 cents on residence telephones and $1 on business telephones.

May 26: Platte Valley Telephone Co., of Scottsbluff, Neb., has been authorized to issue and sell $54,900 worth of capital stock, the proceeds to be used to meet outstanding indebtedness and to build extensions to its system.

NEW YORK.

June 2: Hearing on the complaints of the city of Cohoes, the Business Men's Association and the Board of Trade of Cohoes and vicinity, the village of Waterford and the city of Watervliet against the New York Telephone Co. and the American Telephone & Telegraph Co. as to rates.

OHIO.

May 25: The commission granted the application of the Central District Telephone Co., of Pittsburgh, Pa., for permission to purchase the capital stock of the Washington Telephone Co., of Marietta, Ohio, the Jefferson Telephone Co., operating in Steubenville, Bellaire and the surrounding territory, the Belmont Telephone Co., the Union Telephone Co., and the Woodsfield Telephone Co.

OKLAHOMA.

June 22: Continued hearing on the complaints of Independent telephone companies of Oklahoma against the alleged inequitable distribution of long distance tolls by the Pioneer Telephone & Telegraph Co.

SOUTH DAKOTA.

June 2: Hearing at Hill City, S. D., in regard to an investigation of the new schedule of rates filed by the Nebraska Telephone Co., for its Hill City exchange on February 3 and suspended by order of the commission on March 1.

June 11: Hearing in regard to the application of the Webster (S. D.) Telephone Co. for authority to increase its rates. On or before the date of hearing the company is required to file with the commission a statement of its revenues and operating expenses for the period extending from December 1, 1914, to May 31, 1915, together with a list of all telephones in service on December 1, 1914, and March 31, 1915, showing the number of instruments in service in each class. F—164.

June 16: Postponed hearing in the matter of the investigation and suspension of rates filed by the Nebraska Telephone Co. for its Hill City, S. D., exchange and telephone lines connected therewith, dated February 16, 1915, and to become effective January 1, 1915. F—190.

June 18: Postponed hearing in the case of Bunnell & Son, et al., vs. the Chicago, Milwaukee & St. Paul Railway Co. F—185.

WISCONSIN.

June 11: Hearing in regard to application of the Prospect, Guthrie & Big Bend Telephone Co. for authority to increase rates and charges. U—794.

June 11: Hearing on the case of Peter B. Bogart et al. vs. the Wisconsin Telephone Co. as to rates. U—341.

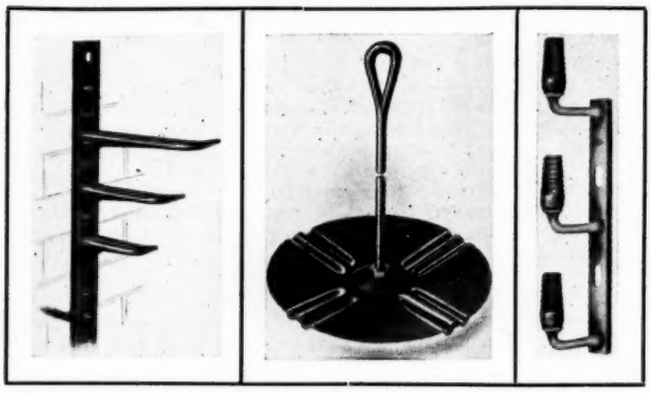
June 15: Hearing at Barron, Wis., in regard to the case of the common council of the city of Barron vs. the Barron County Telephone Co. and the Hillsdale & West Telephone Co., as to connection. U—764.

June 17: Hearing in regard to application of the Menomonee Falls (Wis.) Telephone Co. for permission to increase its rates, tolls and charges. U—797.

From Factory and Salesroom

Barnes & Kobert Pole Line Hardware.

Although the Barnes & Kobert Mfg. Co. has only been in business for a few years, its staff of engineers has been prolific in the development of devices and specialties suitable for use in the electric light, power and telephone fields. Some idea as



B. & K. Products—Cable Rack, Anchor and Wall Bracket.

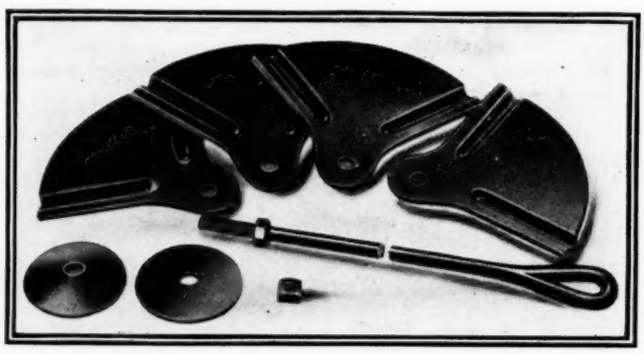
to the variety of specialties the company manufactures may be obtained by referring to its latest 75-page catalog, which contains illustrations and descriptions of B & K specialties.

This company was formerly established at New Haven, Conn., but because of its rapid growth and the necessity for expansion, its offices and factory were moved to Milldale, Conn. It now maintains a factory equipped with modern machinery and well adapted to manufacture the company's pole line hardware specialties.

Included in its telephone specialties are guy clamps, guy anchors, cable racks and hooks, wall and cross arm brackets and a general line of pole line hardware.

It is said that the ideal guy clamp is one that will hold a guy up to the point where the rope breaks on a direct pull without slipping or injuring the strand. The B & K guy clamp, it is claimed, is the only practical means of holding a guy with the maximum efficiency. The method of holding is not a friction grip. The clamp consists of a drawn steel case with rounded recesses for the cable and in the two-bolt type it is bridged in the center.

It is not necessary to take the clamp apart in order to install it, the nuts being backed part way off, the bolts turned longitudinally, the cable laid in the recesses and drawn into the



The B. & K. Anchor Disassembled.

case portion by powerful T-headed bolts having United States standard nuts and friction washers to relieve the torsional strain. When the clamp is in position the construction is such that the bolts are under tension, thus precluding the possibility of the nuts becoming loose.

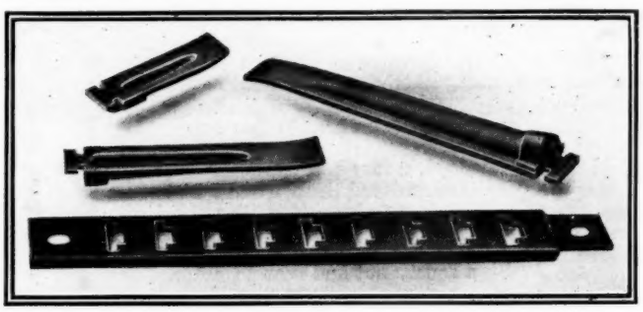
The B & K anchor is built on the mushroom principle, because of its sectional construction. Each section is an anchor in itself. By fitting the sections together the area is increased until the entire disk is formed which is 20 inches in diameter.

In one of the accompanying illustrations is shown the simplicity of B & K cable racks which are built in unit sections. The racks and hooks are made of pressed steel. A notable feature of the hooks is the long tapering rib which reinforces and makes them rigid and strong. No disturbing of the cable is necessary in installing, as a vertical movement of only 5/16 of an inch is required to insert the bracket.

B & K bracket hardware is the result of practical experience, and it is claimed that all the objections usually found in this class of material have been eliminated for the following reasons:

Locust or oak cobs thoroughly kiln dried and impregnated with paraffin under pressure are used. Cold drawn steel shells are forced on and the cobs are screwed on to the bracket. Shells are then swedged into position, a locking feature preventing the thimbles from backing off or becoming loose due to any shrinkage that might occur. This combination secures the desired wood thimble feature and precludes the possibility of cobs splitting.

Wall plates are made of pressed steel and open hearth channel, and brackets of hot forged open hearth steel. All B & K bracket hardware is hot riveted by electric riveters. No metal portion of the bracket touches the insulator, thus



The Parts of the B. & K. Cable Rack.

insuring great insulating efficiency. The wood cob eliminates any possibility of the insulator breaking, due to expansion.

If any telephone company is desirous of getting better acquainted with B & K specialties, a line to the Barnes & Kobert Mfg. Co., of Milldale, Conn., will bring a copy of its latest catalog.

Stromberg-Carlson Exhibit at Tri-State Convention.

One of the exhibits which attracted considerable attention at the convention of the Tri-State Independent Telephone Association, held recently at Memphis, Tenn., was that of the Stromberg-Carlson Telephone Manufacturing Co., of Rochester, N. Y. The exhibit consisted of various parts of switchboard apparatus displayed in trays, together with telephones and telephone parts mounted on panels. A special type A-5629 magneto switchboard was exhibited, which showed various types of cord circuits, line equipments, etc., in the one cabinet. The switchboard was fitted with removable and hinged panels so that all apparatus was readily accessible and could be effectively displayed for inspection.

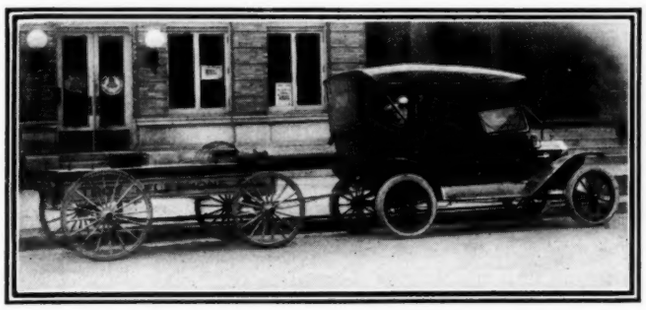
The exhibit was in charge of J. B. Wilkinson, of Louisville, Ky. E. A. Reinke, sales manager, was also in attendance.

New Miami Automobile Trailer.

The Miami Automobile Trailer Co., of Troy, Miami county, Ohio, has just placed upon the market a light automobile trailer especially adapted to the needs of telephone companies. This

is a four-wheel trailer and in weight and carrying capacity was designed with the Ford car especially in mind, although it can be used behind any automobile. It is equipped with Timken roller bearing axles and has 1¼-in. solid rubber tires.

A special feature is the shock-absorbing draw-bar. This is



Miami Trailer Attached to Ford Automobile.

made of steel tubing, in the end of which is a strong, coil spring which works both on the push and the pull and absorbs all shocks. The bed of the trailer is 8 feet long, with a width of 38 inches. The Miami trailer has a carrying capacity of 1,000 pounds and runs very easily, due to its roller bearings.

The automobile public is just beginning to appreciate the great utility of the trailer and its adaptabilty to many uses. It will undoubtedly find a great field of usefulness among telephone men, for transporting material used in repair work.

The Garford Mfg. Co.'s Annual Picnic.

An annual event of interest to telephone men, particularly those in northern Ohio, is the big picnic given by the Garford Mfg. Co., of Elyria, Ohio. This year the picnic will be held Saturday, June 12, at Linwood Park, a few miles west of Elyria. The park is a beautifully wooded spot, situated on Lake Erie and is truly an ideal place for a big picnic gathering.

The Garford Mfg. Co. has arranged for a special train to take all its employes and families to the picnic grounds. A fine program of games and sports has been arranged and every telephone man is cordially invited to be there.

At the 1914 picnic the ball game between two girl teams, which were made up of girls from the office and factory, created a great deal of interest and was commented on by many metropolitan dailies. The game was well played and their knowledge of indoor baseball was a source of continuous surprise to the spectators. The same teams will play this year and a real contest is assured. There will also be a contest between the men's office and shop teams.

The attendance at the 1914 picnic was about 1,000 and from the interest already evinced there will be many more gathered at this year's outing. The official program has been combined with the June issue of Gar-Facts and is a clever piece of printed matter. The size of Gar-Facts has been increased from 24 to 32 pages. It not only contains a complete program for the picnic, but is filled with many interesting articles, among which is one by Ray H. Manson, chief engineer of the company, on "Home-made Telephones."

In its program, the Garford Mfg. Co. announces that telephone visitors are especially invited and are assured a good

Enters Consulting Field.

Arthur Kneisel, former assistant city telephone supervisor of Chicago, has opened an office at 29 S. La Salle street, Chicago, as consulting engineer. He will specialize in patent work, telephone engineering and representation before public service commissions for which his 15 years' experience in telephone work especially qualifies him.

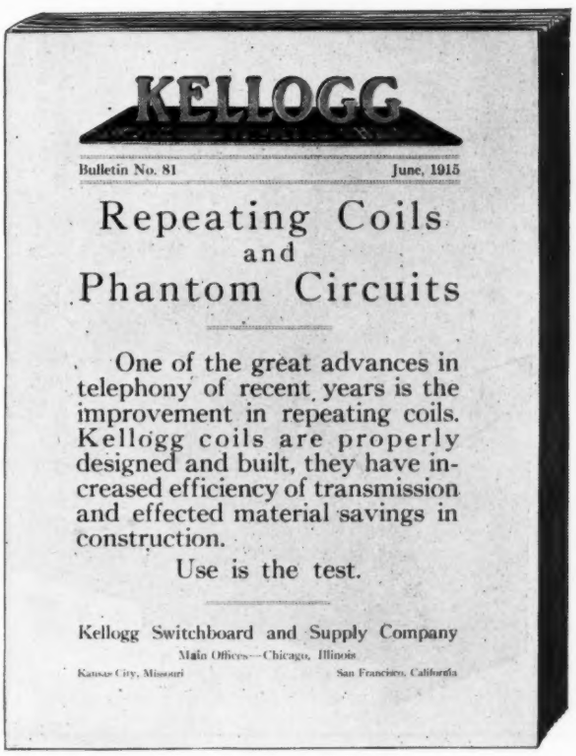
Mr. Kneisel was educated in the public schools of Louisville, Ky., and the State University of Kentucky. After operating and installing experience with the Cumberland Telephone & Telegraph Co. and the Stromberg-Carlson Telephone Mfg. Co., Mr. Kneisel joined the engineering department of the Faller Automatic Exchange Co. in 1902. He next was manager of the Eastern New York Telephone & Telegraph Co. at Hoosick Falls, N. Y., and some time later became head of the apparatus division of the engineering laboratory of the Western Electric Co. in New York City.

Three years were spent in the employ of the Chicago Telephone Co. after which, in 1911, he joined the engineering staff of the North Electric Co. Later he entered the patent department of the Telephone Improvement Co. While with this company Mr. Kneisel took up the study of patent law and passed the examinations for registration as attorney in the United States Patent Office. About a year ago Mr. Kneisel was appointed assistant city telephone supervisor of Chicago. In connection with this work, he drew up a report relating to the disposal of the Chicago automatic telephone system in the event of its being taken over by the city.

Kellogg Bulletin on Repeating Coils.

A most instructive pamphlet is that recently published by the Kellogg Switchboard & Supply Co. It is on the subject of repeating coils and phantom circuits and is known as Bulletin No. 81.

Telephone men desirous of learning more about efficient transmission should have this new bulletin, which includes matters relating to phantom circuits, obtaining phantom circuits, line conditions, transpositions, etc. The subject matter was written by a well known Kellogg engineer, whose knowledge of this important branch of exchange management is wide and based on many years of practical ex-


KELLOGG
Bulletin No. 81
June, 1915
Repeating Coils
and
Phantom Circuits
One of the great advances in telephony of recent years is the improvement in repeating coils. Kellogg coils are properly designed and built, they have increased efficiency of transmission and effected material savings in construction.
Use is the test.
Kellogg Switchboard and Supply Company
Main Offices—Chicago, Illinois
Kansas City, Missouri
San Francisco, California

Cover of New Kellogg Bulletin.

perience in exchange operation. The circuits accompanying the text are instructive and readily understood. In addition to these are half tone illustrations of the latest type of Kellogg coils for this class of work.

Any telephone man may obtain this bulletin by writing to the Kellogg Switchboard & Supply Co., at Chicago.

Oshkosh Company's New Catalog.

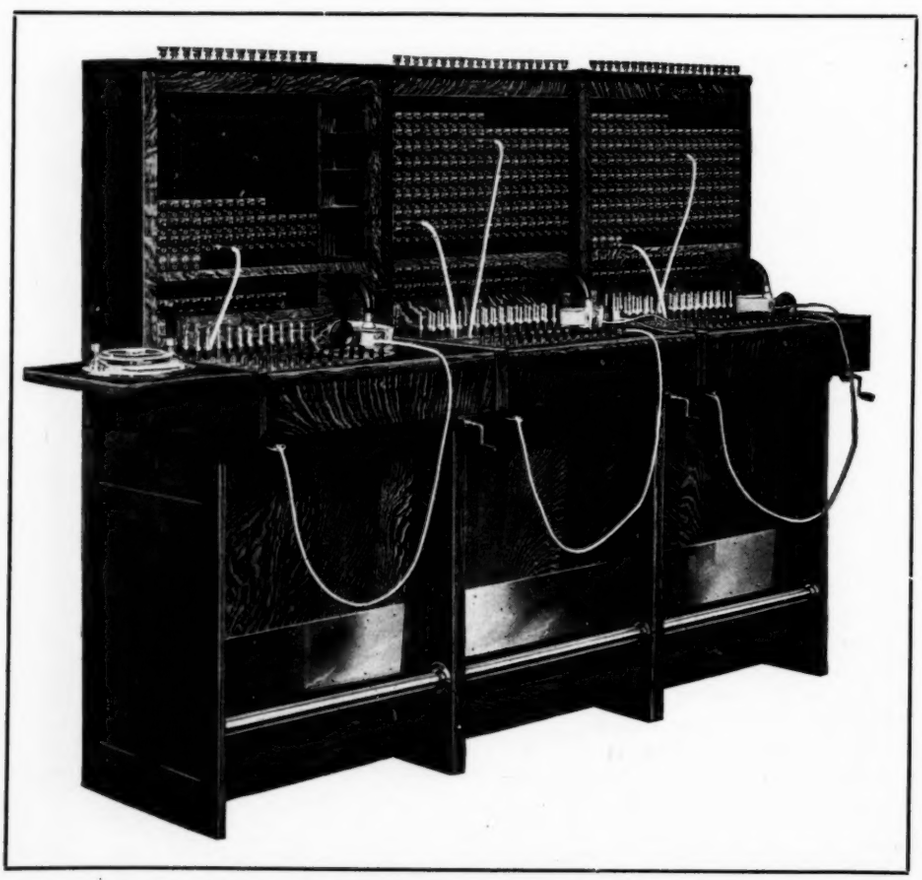
A new catalog, No. 45, will be issued in about a week by the Oshkosh Mfg. Co. of Oshkosh, Wis. This, it is claimed, will be the most complete catalog of strictly outside construction tools issued by any manufacturer. It will be furnished, either bound or in loose-leaf form. Sheets can be supplied that conform in every way to those in the Electrical Supply Jobbers' Association "Red Book" with a discount sheet on the same size paper—all perforated. Bound copies of sets of sheets can be obtained either from the Oshkosh office or from any of the Oshkosh Mfg. Co.'s representatives.

Although the Oshkosh Mfg. Co. markets its entire output of tools through the recognized electrical jobbers, it will be glad, indeed, to supply all operating companies with catalogs upon request, together with information as to the nearest jobber carrying a complete stock of the company's construction tools.

Burns Express Board Installed at West Franklin, Ill.

The American Electric Co., of Chicago, has just installed one of its well known Burns Express switchboards for the Murphysboro Telephone Co., at West Frankfort, Ill. The accompanying illustration shows the general appearance of the board with a calculagraph mounted to the left of the first operator's or toll position and a row of pigeon holes on the right side of the drop space of this toll position.

The cabinet is made of quarter-sawed oak, finished in golden oak and highly polished. It is equipped with chest-



Three-Position Burns Express Board for Murphysboro Telephone Co.

plate transmitters of the latest type. The ringing and listening ring-back keys have the master springs made of phosphor bronze. This insures positive action and long life. The talking contacts in the keys have points of pure platinum. The drops and jacks, constructed so as to form a single unit, are held in place by a rod passing through each row of drops from the top to the bottom, making it possible to remove a drop and jack by just raising this rod above the drop and jack wanted and pulling it out, no unsoldering being necessary. All the blank space is filled in with individual blanks so that by removing one blank a drop and jack can be installed.

The cord circuits in the second and third positions have double clearing-out drops with two condensers, making a sure "ring off" non-ring-through cord circuit. The transfers are plug-ended with lamps for signals, and each operator's equipped with the latest approved circuits.

The demand for this type of switchboard—"Burns Express"—the company states, is greater this year than it has ever been. The switchboard departments of the American Electric factory have been running at full capacity this year and for some time have been working overtime to keep up with the increased demand for its goods.

A New Peerless Testing Set.

The new Peerless type CI-2011 switch dial decade testing set, embodies, it is stated, distinct improvments in test sets of great and practical advantage. It is also claimed that it has special features which have never been produced in testing sets of this type before. This set was designed for the use of the ordinary workman, and has been so simplified that it does not require a technical education to obtain accurate results. The directions for making all tests are printed on a card, which is attached to the lid of the set. The simple circuit design, doing away with all complications, has made it a universal instrument for all classes of men from the ordinary lineman to the electrical engineer.

The rheostat consists of four decades of ten coils each, values of units, tens, hundreds and thousands, said to be accurate to 1/10 of 1 per cent. The bridge coils are also accurate to 1/20 of 1 per cent. The instrument has a self-contained, removable galvanometer, and also self-contained battery. Provision is made by means of binding posts to use outside battery when a higher electromotive force is desired than that given by the cells in the set, which are ample for ordinary testing.

A new arrangement of the test switch, which was particularly designed for this set, is that by which, when a resistance test is to be made, the indicator is turned to *W. B.*, placing the Wheatstone bridge connections in circuit. When desiring to make the Varley loop test it is only necessary to turn the test switch to the indication *V. L.*, when the connections for the Varley loop test are in circuit. To make the Murray loop test the test switch is turned to the indication *M. L.*, when the connections for the Murray loop test are in circuit. Thus the test settings are made automatically, the special switch eliminating two knife switches usually necessary to obtain the correct electrical connections. All possibility of error in switch settings, as well as the chances of a man throw-

ing one switch and forgetting to throw the other, is thus eliminated through this arrangement.

The new method of indicating the resistance eliminates all chance of misreading the results, as the dial only is turned and the contact made on the various values of coils. The value of the particular coil in circuit is shown in a small circular window at the side of the dial handle. One number only being visible, no possible error can occur in reading the result. Each dial is provided with a detent, so that when the brush is full on the block, its position is indicated not only by the value in the window, but also by positive automatic detent with click. It is thus possible to tell by feel or sound, without looking at the dial, when the brush is in the center of the contact stud.

The New Peerless Switch Dial Decade Testing Set.

Another feature is that there is said to be no burning out of the rheostat to make it useless until repairs have been made. This is accomplished by using full ten coils to each decade. This is claimed to be the only arrangement by which it is possible to use a bridge after a coil has been burned out, for in the use of less than ten coils to the decade, after a coil is burned out, the set is absolutely useless until new coils have been obtained. When ten coils are used, if the first coil is burned out, it may be short circuited and the instrument remain in service, allowing for the eliminated coil, while the testing engineer telegraphs for a new coil of the correct value. This is a feature which is much appreciated by testing engineers.

The removable galvanometer with shunt protection is another prominent point. The Peerless CI-2011 set is equipped with a galvanometer shunt, as it is a vital necessity to have a shunt on the galvanometer. It is said to be the only portable instrument on the market having a removable galvanometer, which is furnished with this shunt protection. This is a very important feature. There are times when it is advisable to use outside electromotive force, and occasionally 110-volt circuits are used for this purpose. It is readily seen, therefore, that the galvanometer should have ample protection.

The galvanometer is built on the D'Arsonval type, moving coil system, and is as rugged as a voltmeter. Owing to the improvements which have been made in the system it is extremely light, thus eliminating the trouble which has been present in the past in pivot and jewel instruments, and at the same time it is claimed to be unequaled in respect to its extremely high sensitivity.

The test set, which has been so simplified that anyone can use it, is adapted for the general testing field. Its use is not limited to the telephone and telegraph companies, street railways and central stations, where formerly the majority of Wheatstone bridges have been used, but is said to be so simple in its operation and so accurate in its results that its field has been broadened so that it meets the requirements of everyone interested in measuring electrical resistance. The last objection to the highly desirable, more general use of a high grade testing set (its cost) is said to be overcome by this new set, as it costs no more than a high grade voltmeter.

The instrument is placed upon the market by Thompson-Levering Co., of Philadelphia, Pa.

Two Large Construction Jobs Under Way.

The Kansas Telephone Co., of Ottawa, Kan., is doing a large amount of construction work preparatory to a consolidation of the two Ottawa exchanges recently purchased from the Kansas City Long Distance Telephone Co. from the Kansas City Long Distance Telephone Co. and from the Missouri & Kansas Telephone Co.

The new central office building will be ready for occupancy by August 1, when the installation of a Stromberg-Carlson full multiple common battery central office equipment will begin. Eighteen hundred new telephones have been purchased from the Garford Mfg. Co. Extensive work on the outside plant is at this time well under way.

The Home Telephone Co., of Joplin, Mo., has just completed plans for a large amount of construction work in three of its exchanges, comprising extensions to the distributing sytems.

How Much Do You Know About the Telephone Business?

Have you ever given credit to the men engaged in the telephone business for knowledge "of the game" which they may have? What are you doing to improve the position of your company? Are you operating as economically as you can? Possibly if you joined the

NATIONAL INDEPENDENT TELEPHONE ASSOCIATION

you could get ideas that would be worth "hundred-fold" the cost of joining—"one dollar per year."

Send your dollar bill today for your company.

National Independent Telephone Association

527 Colorado Building
Washington, D. C.

The work of both of these companies is being done under the direction of W. C. Polk, consulting engineer, of Kansas City, Mo.

Stromberg-Carlson Equipment for Ottawa, Kan.

The Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y., has been awarded the contract for complete central office equipment to be installed at Ottawa, Kan., for the Kansas Telephone Co. This company was recently organized to purchase the exchanges of the Kansas City Long Distance Telephone Co. and the Missouri & Kansas Telephone Co. in Ottawa, and to consolidate the plants.

The switchboard will consist of nine unit-type, single-position, switchboard sections equipped for the immediate operation of 140 magneto lines and 1,000 central energy, local lines. The switchboard is equipped with simple multiple circuits and the cord circuits are provided with four-party ringing keys. A wire chief's desk, chief operator's desk, power plant equipment and necessary terminal and protective apparatus are included in the order.

The Babcock Telephone By-Products Plan.

In the matter of by-products for telephone companies as set forth in last week's issue of TELEPHONY, further particulars are now given of the plan for utilizing the telephone circuits for police and fire alarm calls. The plan proposed by Garrison Babcock, of the Police & Fire Alarm Telephone Co., calls for the organization by telephone companies of a new department, which might be termed the fire alarm bureau, to handle the companies' by-product business. Under this plan a company will contract with its bureau to supply cable pairs and operating service. The bureau in turn is to solicit and make contracts for the service and look after all maintenance outside of cables and central office equipment. The company is to be paid by the bureau 50 per cent. of the contract income of the first year and 80 per cent. the succeeding year.

It is intended that the fire alarm bureau and the municipality will enter into a contract whereby the latter will purchase all required master boxes and police patrol telephones, and pay to the bureau $12.50 per annum for a monthly test and inspection of each fire alarm master box, and $25 per annum for police patrol telephone service.

The fire alarm subscribers will contract with the bureau and municipality for service for a period of five years, and pay for the initial installations of their service lines, which will be conducted under municipal rules. The cost for the operating service to be charged the fire alarm subscribers by the fire alarm bureau is placed at $1 per annum and 25 cents for annual inspection for each station.

The fire alarm bureau will maintain an authorized repair department for the municipality and the fire alarm subscribers. The cost of all repairs is to be charged to the owner of the equipment that may be found in need of repair.

The cost of the respective equipments which the system requires are approximately as follows:

Master fire alarm boxes, each	$25
Fire alarm circuit breakers, each	$1.50
Police patrol telephones, each	$25

The cost of installation is estimated at from $3 to $10 per station, to be paid for by the purchaser.

An exclusive license under all of the patents owned by the Police & Fire Alarm Telephone Co. for use of its systems in the territory covered by the lines of the local telephone company will be issued to the fire alarm bureau of the telephone company. In return the bureau will pay to the Police & Fire Alarm Telephone Co. 10 per cent. of all receipts from contracts. It will receive a commission of 10 per cent. on the purchases by the municipality and subscribers for equipment, furnished under the specifications of the Police & Fire Alarm Telephone Co.

In a typical telephone plant serving 2,500 subscribers, it is conservatively estimated that 5,000 fire alarm substations would be contracted for within three years. During that period, based upon the foregoing figures, the incomes to the telephone company will be accrued, as follows:

FIRE ALARM.

5,000 stations 1st year service, @ 50 cents each	$2,500
2,500 stations 2nd year renewal, @ 80 cents each	2,000
2,500 stations 3rd year renewal, @ 80 cents each	2,000

POLICE PATROL.

100 stations 1st year service, @ $12.50 each	$1,250
50 stations 3rd year service, @ $20 each	1,000
50 stations 2nd year service, @ $20 each	1,000
Total for first three years	$9,750

Renewals on the above, fourth year:

5,000 fire alarm stations @ 80 cents	$4,000
100 police stations @ $20	2,000
Total	$6,000

Note: As no additional operating or maintenance will be required of the telephone company, this total is a net profit.

It is estimated that the development will have involved the use of 200 cable pairs, which will have their entire capacity filled within ten years, giving double the foregoing income at that time.

The income to the fire alarm bureau of the telephone company, estimated on the same basis, will be as follows:

FIRE ALARM.

5,000 stations 1st year service, commissions @ 50 cents	$2,500
2,500 stations 2nd year service, renewals, @ 20 cents	500
2,500 stations 3rd year service renewals, @ 20 cents	500
10,000 inspection fees (subscribers) @ 26 cents	2,500
600 master box fees (tests and inspections) @ $12.50	7,500

POLICE PATROL.

100 stations 1st year service, commissions @ $12.50	$1,250
50 stations 2nd year service, commissions @ $5	250
50 stations 3rd year service, commissions @ $5	250
	$15,250
Commission on sales, to subscribers and municipality, for apparatus amounting to $15,000, @ 10 per cent.	1,500
Total	$16,750

In connection with this transaction the fire alarm bureau will have expended the following:

For commissions to Police & Fire Alarm Telephone Co. (three years)	$1,525
For three years' salary to bookkeeper and solicitor	3,000
For three years' salary to inspector and solicitor	3,600
Incidentals	1,000
	$9,125
Net profit at end of third year	$7,625

The fourth year renewals on the foregoing will assure the fire alarm bureau of the following income:

5,000 stations fire alarm, service, @ 20 cents	$1,000
100 stations police patrol, service, @ $5	500
200 master box test and inspection, @ $12.50	2,500
5,000 inspections, @ 25 cents	1,250
	$5,250
Commission to Police & Fire Alarm Telephone Co.	$ 525
Gross profits from renewals	$4,725
Pro-rata costs, inspections, etc.	$1,500
Net profit to fire alarm bureau, renewals, fourth year	$3,225

From the foregoing calculations, this by-product may be estimated for any size plant by relative comparisons.

The plan is thought to be particularly adaptable to the average local telephone situation. It relieves the telephone company of direct municipal relations which in the event of franchise renewals might cause complications, while the mutual

Do you wish any of this 5 per cent "Guaranteed" Cumulative profit-sharing preferred stock?

A considerable amount of the stock we are offering has already been spoken for. At par value—$50 it offers telephone companies and officials an excellent chance to acquire a permanent and valuable investment besides innumerable advantages.

The purpose of the National Telephone Securities Co. is to provide for its members an opportunity to dispose of their bonds, to make loans and to raise money whenever necessary. Besides it will assist in preparing a bond issue; will aid in financing new construction so as to prevent reinvestment of earnings and to enable stock dividends to be paid rather than reinvestment of earnings in new construction.

No money will be called for until operations are started and then only 50 per cent will be collected; the balance to be paid in quarterly payments divided equally for fifteen months. Send for subscription blanks.

NATIONAL TELEPHONE SECURITIES COMPANY

H. H. KNIPE, PRESIDENT

OLNEY - - - ILLINOIS

ownership of the fire alarm equipment it is claimed will secure for the telephone company, a permanent and popular relationship with the municipality, together with a full compensation for its service.

Operating companies wishing to adopt this by-product, may secure further particulars by correspondence with Garrison Babcock, care TELEPHONY, Chicago, Mr. Babcock is now negotiating with prominent manufacturers in the Independent field for the adaptation of their standardized apparatus to the specifications of his system and an announcement of these arrangements together with an interesting display is anticipated in the near future.

The "Fire Alarm in Every House" idea is worthy of the serious attention of all telephone companies which are at liberty to adopt it as an earning of by-product.

Paragraphs.

THE NAUGLE POLE & TIE CO., of Chicago, has opened an office at 1027 Michigan Trust Building, Grand Rapids, Mich., in charge of H. W. Mitchell. The company will now be better able to serve its customers in that territory.

THE LEEDS & NORTHRUP CO., of Philadelphia, Pa., has issued a four-page folder listing and quoting special prices on used and shop-worn instruments, all of which, it is stated, are in first-class electrical condition. Among the instruments listed are a number of portable galvanometers, several resistance boxes, one Wheatstone bridge, one Fisher testing set No. 1, one Fisher testing set No. 2, a dial decade testing set and an L. & N. fault finder. A copy of this list of testing instruments may be obtained by addressing a request to the company at 4901 Stenton avenue, Philadelphia.

R. S. MUELLER & CO., of Cleveland, Ohio, has issued a unique piece of advertising in the form of a 20-page booklet entitled "Time Savers in Any Electrical Work Requiring Quick, Temporary Connections." In this folder are described and illustrated various types of Universal test clips for various purposes. The company will be pleased to send a copy of the booklet to any company desiring it.

Book Review.

PUBLIC UTILITIES: THEIR FAIR PRESENT VALUE AND RETURN, by Hammond V. Hayes. Published by the D. Van Nostrand Co., New York. 203 pages. Price $2 net.

This book is intended as a companion volume to "Public Utilities: Their Cost and Depreciation." The latter takes up the methods to be pursued in the valuation of public utility property while the present volume deals with the line of reasoning to be followed to ascertain the fair present value of a property after an appraisal has been made for rate-making purposes.

After a statement of the conditions existing between the utilities and the public as regards the question of rates, definitions of replacement cost, original cost and depreciation are given in order that there may be no confusion as to their use in the later discussions. The subject of fair present value is then considered with reference to rates for new companies, for previously unregulated companies, for non-competitive successful and unsuccessful undertakings and for competitive undertakings.

After discussing fair present value as related to a fair rate of return, general conclusions as to the later are given. The replacement cost is distinguished from actual original cost and the groups—cost of promotion, cost of physical property and going value—discussed. In the chapter on actual original cost, the methods of ascertaining the actual cost of the property now in use, which is stated to be the meaning of the term "actual original cost," are described.

Going value and depreciation are discussed at considerable length, the various arguments for and against them being treated.

The book contains much that will aid those interested in valuation matters. It will assist in making clear many points which are not entirely understood by many.

Condensed News Reports

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items of Interest as to Their Plants and Systems

Personal.

A. B. CAMPBELL has purchased the telephone plant at Marcus, Wash., from A. C. Wetterer and will assume active charge on June 1.

L. P. HAMPTON, local agent for the Iowa Telephone Co., at Hampton, Iowa, has been placed in charge of the company's exchange at Perry.

L. O. MCCLINTOCK, for the past two years manager of the Tobias, Neb., exchange of the Lincoln Telephone & Telegraph Co., of Lincoln, has been promoted to the management of the De Witt exchange.

F. N. BIRCHARD, who for a number of years has been manager of the Lake Odessa, Mich., exchange of the Citizens Telephone Co., of Grand Rapids, has been transferred to the management of the company's exchange at Portland. F. G. Howard, formerly manager at Greenville, has succeeded Mr. Birchard at Lake Odessa.

MISS OPAL WRIGHT, an operator in the employ of the Indianapolis Telephone Co., at Indianapolis, Ind., was chosen May Queen for the Flower Mission annual fete. The entire organization of the Indianapolis company backed Miss Wright in the contest. On the last day many of the operators, upon being relieved, made use of the company's telephones and secured pledges from hundreds of subscribers to cast at least one vote. The votes cost five cents each, the proceeds of the contest going to the Flower Mission hospital for incurable tubercular patients.

MISS C. LUSBY, formerly chief operator at the exchange of the Paris (Ky.) Home Telephone Co., though on scout duty for the past several months, will hereafter devote all her time to this latter work, according to arrangements made by B. Y. Chambers, assistant superintendent of the Central Home Telephone & Telegraph Co., who is in direct charge of the efficiency operating campaign. Miss Lusby, who possesses a very attractive personality and an ability to get the kinks out of exchanges where things are at cross purposes, is now at Paducah, where she is looking into the situation at that exchange and making suggestions, whenever she sees an opportunity, for improvement in the service. Previously she had been engaged at one time or another at most of the exchanges in the eastern district of the Central Home company, then she visited several offices in the central district and has now been assigned to work in the western district.

Though the term "scout duty" is used, this does not indicate that there is anything that is not above board and in the clear about the methods under which Miss Lusby operates. Her visits are made under no sort of an incognito—she goes merely as an efficiency engineer on exchange operating. Much of the high character of the service that is being given by the local and long distance lines of the Central Home is ascribed to the good results from Miss Lusby's assignments.

New Companies and Incorporations.

AKIN, ILL.—The Akin Telephone Co. was recently incorporated with a capital stock of $1,000. The following are the incorporators: J. M. Chapman, Lloyd Pickard, Harmon Summers and W. R. V. Hobbs.

HILLSBORO, ILL.—The Montgomery Telephone & Telegraph Co. recently filed articles of incorporation with a capital stock of $1,000. The incorporators are C. W. Bliss, A. M. Howell and J. J. Grey.